New Year's Greetings

MAY you be as happy as a native of Fiji; free as a sea gull; rich as a pearl-lagoon; circled with comfort as an atoll is girdled by the summer sea.

Suva, Viti Levu, Fiji Islands. Henry C. Pearson.

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The Passing of 1925

EVEN a cursory review of the achievements of the rubber industry for the year just passed affords ample basis for the forecast that 1926 will be one of the best years ever experienced by the various branches of the rubber industry. At the outset of 1925 the trade was confronted with a condition that would have grievously taxed the resources of any great industry, i. e., the beginning of a considerable rise in the cost of crude rubber. The fact that it coped with this severe handicap without serious inconvenience, and even scored a distinct advantage, well attests the sagacity of its leaders. Incidentally the entire trade learned lessons in economy, little heeded when rubber was cheap, that should have a lasting and salutary effect.

With a recession from the peak prices for rubber many buyers found comfort in the belief that the Stevenson Restriction Act was seemingly expending its force, having accomplished its primary purpose, which was economic rather than political; and their hopes were raised by developments that may in the near future materially moderate the cost of crude rubber. Among these were the efforts of the federal authorities to interest Americans in rubber-growing and other tropical enterprises, the launching of plans for large Hevea plantations in Liberia and Mexico, a more intensive search for wild rubber, and the resumption of guayule extraction in Texas and Mexico.

Notable, too, was the greatly-increased and more efficient production of reclaimed rubber, and its application in many novel ways. By devising new mixes and accelerator combinations, the rubber chemists helped to cut costs and improve products markedly. Makers of rubber machinery and of compounding ingredients brought out so many devices and materials of outstanding merit that more old methods and equipment were scrapped than in any preceding year.

Many more manufacturers of rubber goods found that continuous processing, the elimination of needless varieties, and the abolition of unsound merchandising practises, such as spring dating, increased profits and stabilized trade. In collateral lines, as in tire, footwear, and proofing fabric, a strong demand with ample cotton at a moderate price made mill-owners optimistic. Competing rubber concerns, contemplating mergers, noted with much satisfaction the more favorable attitude of the government toward combination, with even the suggestion of a rubber buyers' pool to enable Americans to better meet prices on foreign manufactures.

In citing the great gains to the trade, it is melancholy, however, to note also the keen losses suffered in the passing of such distinguished figures as Augustus O. Bourn, Fritz Achelis, L. D. Apsley, Col. C. M. DuPuy, Christian Franz, Chas. Loewenthal, Frederick Stern, Hubert L. Terry, Dr. Siegmund Seligmann, Elmer S. Firestone, and many other worthy workers who promoted the progress and prestige of the rubber industry.

Offsetting High Priced Rubber

NOTHING seems more likely to happen in the most complicated industry in the world—rubber—than the unexpected. When the price of crude rubber was very high some fifteen years ago, and manufacturers were sorely puzzled as to how they could keep down the prices of products, ingenious chemists relieved their distress by providing organic accelerators, which since through merit and variety have revolutionized the rubber industry almost as much as aniline dyes have the textile industry. Not the least of the great advantages resulting from the use of such cure-quickeners has been the reduction in the cost of manufactures. Doubtless with the present upswing in crude rubber prices another radical remedy will be found for a price trouble similar to that which worried many rubber buyers years ago.

It may be that such relief will come through the researches of the untiring rubber chemists; or perhaps it will be the resourceful manufacturers themselves, who, through more efficient processes, improved compounding, greater standardization, etc., will solve the secret of offsetting the advance in the cost of rubber. At any rate, recent developments quite warrant the belief that the makers of rubber goods will soon overcome a present adverse factor just as effectively as they surmounted an even harder handicap when the industry was fifteen years younger.

Restriction and Political Gestures

SECRETARY of Commerce Herbert Hoover is credited with the suggestion that the United States should retaliate on "foreign monopoly" of rubber and other raw materials by legally enabling American importers to combine so as to control the market in the buyers' interest, or as exporters, may band together under the Webb-Pomerene law to regulate foreign sales of American-made goods. The assumption is that such a combination could, without effective oppostion, dictate prices of practically every commodity, and emulate as it were the practise of Brazil in valorizing coffee exports.

Such a quixotic proposition does not do justice to the worthy Secretary, who has done much to extend our foreign trade. No one knows better than he that rubber, for instance, is not being monopolized by growers or government. The trade is familiar with the effort of the Malay States through the Stevenson Act to raise needed revenues and to sustain the hard-hit plantation industry; and how shrewd speculators took an advantage that consumers might just as well have seized had they similar confidence in the restriction plan. There is no corner in rubber, as there has been from time to time in wheat, cotton, and other staples, much to the discomfiture of buyers here and abroad.

Instead of enacting legislation adverse to that larger prosperity which comes only through bringing buyers and sellers of all lands closer together, it would be more edifying to our neighbors and advantageous to us were we to earnestly strive to control the commodity speculators who do so much to keep such classes apart, who stir up international antagonisms, and who prompt aggrieved foreign buyers to acts of reprisal. Our recent crude rubber experience should teach us a lesson, and that is that we should enlarge our vision in the matter of foreign commerce. It can not be all take and no give. Our interdependence must be more keenly realized. The raw materials that we can not produce we need just as urgently as foreigners need the articles that we fabricate from such materials. Reduced to its simplest terms, trade is but barter, and the easier we make the exchange of goods the better for all concerned.

Valorization, which probably would be the chief weapon of an importers' combination, has been a boomerang as much as it has been a benefit, even in Brazil; it contravenes the highest principles of American trade; and it has played no part in the success of nations that lead in international commerce. The chances are that an importers' trust would but bring up troubles of which we had not even dreamed. So perhaps it is wiser to continue blending good will with enterprise, and "to bear those ills we have than to fly to others we know not of."

THE HUGE TIRE INDUSTRY, WITH A VALUE OF A billion dollars, is completely dependent on automobile transportation. But is everything being done to preserve the prosperity of these two great industries through the construction of more and better roads? On January 1, 1925, there were 470,000 miles of surfaced highways—federal, state and local. Based on present registration of 17,591,981 cars there are 37 cars to the mile. Car production is now at the rate of 3,000,000 yearly and in five years there will doubtless be more than 32,000,000 cars in operation. Will there be enough highways for these cars? This question is up to the tax payers who must see that a careful, efficient, road financing program is followed, else two great industries, tires and cars, may be jeopardized.

THE BUSINESS WORLD SEEMS SLOW IN APPRECIATING the advantage afforded with the new air routes whereby the mails are carried in less than one-half the time required by trains. Yet the opening of the air routes is undoubtedly the greatest postal development since railways replaced the pony express. Letters dispatched from New York about 9 p.m., for instance, go out in the first delivery on the following morning in Chicago; and the further distribution of the mails by trains from that city is advanced by at least twelve hours. The benefits of such speedy communication to industry in general should be considerable; and assurance is given that if the new service be well patronized its range will be greatly widened and its efficiency much enhanced.

Rubber Compounding[1]

Origin and Reasons for Rubber Compounding—Definition and Divisions—Some Early Rules, Materials, Methods and Formulas

By Webster Norris

RUBBER workers appreciate that successful rubber compounding is back of the quality and cost of the rubber goods they produce. Therefore their interest in the subject of compound writing is usually keen even if they never become compounding specialists. In this and subsequent articles it is hoped to make clear to unscientific rubber men the general principles of writing and calculating rubber compounding formulas. For the benefit of such readers technical terms will be avoided as much as possible and when introduced will be accompanied by explanation of their significance.

Early Manufacturing Difficulties

The first rubber manufacturers made their rubber goods without modifying the natural characteristics of the crude gum. Their manufacturing proved a source of great loss and disappointment to them and their customers. The goods had little practical worth because the cold of winter rendered the articles unmanageably stiff while the heat of summer made them inconveniently sticky and unusable. The great technical problem that faced Goodyear and other experimenters of his time was how to remove these obstacles. They searched assiduously for ways and means to change the nature of crude rubber to obviate the difficulties it offered. Thus compounding began with this practical object in view.

Success came at last to that tireless experimenter and pioneer of the rubber industry, Charles Goodyear, who in 1839, by fortunate accidental heating of a sample mixture of rubber and sulphur, discovered vulcanization, the basic process of rubber working, thus revealing the long sought critical material and method for the practical utilization of crude rubber.

The prime reason for compounding rubber is to render it vulcanizable into a new product ranging from very hard vulcanite to soft elastic. The changed rubber is a new material characterized by physical properties that make it adaptable to unnumbered purposes.

The second reason why rubber is compounded is to conserve it as a matter of economy. The trained compounder studies this point from many angles and plans his stocks of maximum quality at minimum cost. Compounders, until comparatively recently, thought cost per pound the true measure of the economy of a stock. They were misled as to this, however, and are now realizing the importance of reckoning with another factor, that of specific gravity as will be explained later.

Rubber compounding is the art of selecting and proportioning crude or reclaimed rubber and other materials for mixings convertible by vulcanization into useful and economical products possessing desired chemical and physical characteristics. In other words, rubber is compounded to enhance, for practical purposes, the properties of crude rubber. Quality with economy are thus the reasons for rubber compounding.

The resources of the rubber compounder today in the matter of ingredients are somewhat simplified by the elimination of most wild rubber sorts in favor of standard plantation grades. Other materials in the list are multiplied in number. Grouped by their specific functions they are vulcanizers; accelerators of vulcanization; reclaimed rubbers; reinforcing materials or such as increase tensile properties; softeners; color pigments; simple fillers or diluents, and so-called rubber substitutes.

[1] Copyrighted, 1926, by Webster Norris.

Early Compounding

After the discovery of vulcanization, rubber compounding was relatively simple because the uses for rubber were few, being mostly for rubber boots and shoes, weatherproof clothing, power transmission belting, water hose, pump valves and other mechanicals. Every rubber works superintendent was his own compounder and made up the formulas for all stocks required in his products. All crude rubbers were from wild sources and differed widely in quality. When rubber factory practise began the list of ingredients available was a short one including principally sulphur, white lead, litharge, zinc oxide, lampblack, iron oxide, plaster of Paris, barytes, whiting, rosin, coal tar and palm oil.

The plan for compounding was simple and direct. The main object was to produce a workable mixing with plenty of cure or vulcanizing quality. Consequently litharge and sulphur were used in excess, producing heavy goods which sulphured up or bloomed out gray or white on standing. Rubber footwear was an exception because of the large amount of coal tar used to suppress the sulphur bloom.

Superintendents of rubber goods plants were the most progressive compounders. Making and amending mixing formulas was an every day matter to them, necessitated by changes of crude rubbers and the need of meeting a lowered pound cost. A favorite practise was to designate stock mixings by name and setting for each a maximum pound cost. The cost was held down to this figure by any convenient ingredient substitutions that did not lower the quality materially.

Rules for Adding "Cure"

Sulphur, white lead and litharge were known as the cure. The rules applied to cure were to add sulphur in the proportion of half to one ounce to a pound of gum for soft elastic goods, and about five to six ounces to the pound of gum for "vulcanite" or hard rubber goods. Two to four ounces of white lead or litharge were added to the pound of gum. These were used to facilitate vulcanization and promote greater uniformity, particularly in thick or massive articles. Simple rule of thumb procedure was relied upon by the compounder who worked out his formulas at the mixing mill. The common procedure was to break down 8 or 16 pounds of gum on a factory mill, add sulphur and litharge according to the rules mentioned. To this as a basis, selected compounding was added in trial quantities until sufficient was incorporated to produce the desired color, workability, plasticity, and pound cost. The itemized weights of each component of the stock were recorded as determined by their adjustment at the mill and recorded in the compound book as an official formula. Practically no attention was paid to the weight of a stock in relation to a standard. In other words compounders took for granted that in attaining low cost per pound they reached the utmost economy in the stock. This was most misleading as will be explained subsequently.

Batches were not figured on a percentage basis but were of all weights, usually less than 100 pounds, to accommodate light weight mixing mills and to meet the requirements of small and varied production. Modern mixing equipment is large and powerful enough to handle very much heavier batches.

Secrecy of Compounding Formulas

The compounds thus evolved were particularly cherished secrets of the business, knowledge of which was entrusted only to the superintendent and compound-man whose duty it was to weigh out the stock. However, in spite of every effort to protect details of the formulas by writing the ingredients in code, a mass of more or less important compounding data invariably circulated through the plants. This often found its way to competitors, generally without any great benefit to them other than a few suggestions.

The loose specification of items in most old formulas as to the quality of the rubber, reclaims, etc., was in fact some measure of protection against their successful unauthorized use when transferred to other plants. Then, as now, the rule of thumb compounder developed some excellent stocks.

The two following formulas are quoted from a book containing an account of the application of rubber to industrial uses.[1] These and others were originally printed by William H. Herbert in the London *Mechanics Magazine* (1856).

English Formulas

ENGINE PACKING

	Pounds
Pará rubber	25
Java rubber	5
Zinc oxide	16
Magnesia	6
China clay	3
Red lead	2
Sulphur	1⅞
	58⅞

SPRING OR WASHER

	Pounds
Java rubber	25
Pará rubber	5
Magnesia	10
Sulphur	1⅜
	41⅜

The above and similar mixings were regarded by Herbert as suitable for making high quality goods. From the view-point of the consumer he regarded, however, much of the rubber compounding of his day as cheap adulteration. He warned his readers not to lose sight of the fact of specific gravity, and to test all rubber goods made with pure, unadulterated rubber by their floating in water. He adds, "Any deviation from this is a proof of some cheap stuff unfairly introduced." As a matter of fact, specific gravity is not a guide to quality in the case of rubber goods of any sort.

The specific gravity of a solid is the ratio of a unit volume of it and the weight of the same volume of water taken at 60 degrees F.

American Formulas

The following belt friction formulas were used by a leading American rubber company of the last century and now out of business. Formula A was their first quality friction and formula E, their fifth and lowest quality friction.

BELT FRICTION A

	Pounds
Coarse pará	10
Assam rubber	10
Borneo rubber	10
Litharge	5
Zinc oxide	5
Whiting	5
Common rosin	0¾
Sulphur	2½
	48¾

BELT FRICTION E

	Pounds
Sierra Leon rubber	5
African small ball	7
Unvulcanized waste	10
Litharge	5
White lead	5
Zinc oxide	5
Venetian red oxide	1
Common rosin	0½
Sulphur	1½
	40

[1] *The Boot and Shoe Manufacturers' Assistant and Guide*, compiled and edited by W. H. Richardson, Jr., Boston, 1858.

It will be noted how vague the E friction formula is, because it does not specify the quality of the uncured waste item constituting 25 per cent of the mixing. The introduction of such a variable quality factor is not to be commended.

RUBBER SHOE COMPOUNDS

SHOE UPPER

	Pounds
Fine pará	8
Caucho ball	8
Litharge	5½
Sulphur	0⅞
Whiting	20
Lampblack	1
Soft coal tar	4
Hard coal tar	3¼
	50⅛

SHOE SOLING

	Pounds
Fine pará	6
Caucho ball	10
Litharge	4½
Sulphur	0⅞
Whiting	13
Lampblack	1
Soft coal tar	6
Shoe reclaim	5
	46⅛

BOOT HEELS

	Pounds
Fine pará	8
Caucho ball	8
Litharge	5
Sulphur	0¾
Whiting	47
Shoe reclaim	20
Ground cured springs	20
Hard coal tar	20
	128¾

The sample formulas show how rubber compounds were arranged virtually without plan other than to ensure ample curing effect and pound cost. Compounders working on a pound cost basis worked without standards, often amending their formulas to serve as alternate for the original one in case of shortage of some of the essential components. In mechanical rubber goods plants the practise of compounding for pound cost led to making new stocks by combining proportions of other mixed stocks as individual ingredients in the new mix. Such needlessly complex mixtures effectually eliminated control of quality and doubtless led to many unexplained freaks in curing and aging.

Practically it was only when the government, the railways and certain large industrial companies required rubber goods made in accordance with specifications of construction and quality that rubber compounding became a study for chemists and technologists. These specifications not only indicated the physical tests required but specified also the weight percentages of new rubber, free and combined sulphur, and limitations on the use of reclaim. These efforts to improve and standardize rubber products related to hose, belting, packing and therefore led to more critical compounding first on the part of the mechanical rubber goods companies. Thus these companies led in the development of stocks for mechanical specialties and later in tires, tubes, etc.

The first forward step was to eliminate the makeshift alternate stocks and those made by combining various stock mixtures of uncertain quality. A simple straightforward stock of definite new rubber content with closely calculated vulcanizing characteristics became essentially dependable both in processing and in meeting definite physical tests. This movement led, also, to close discrimination in the choice of crude rubber grades. For example in belting friction A given above, one would not use Borneo rubber or any of its qualities which ran in five grades from a fair quality gum down to pontianak.

Written on a percentage basis the proportions of ingredients are more readily seen. Thus in this friction there is 62.25 per cent rubber, on this the sulphur figures 8 per cent which is excessive, while the rosin is unnecessary since there is plenty of resin in the gums used and the volume of rubber is sufficient for friction plasticity.

Exploring the Air With Pilot and Sounding Balloons

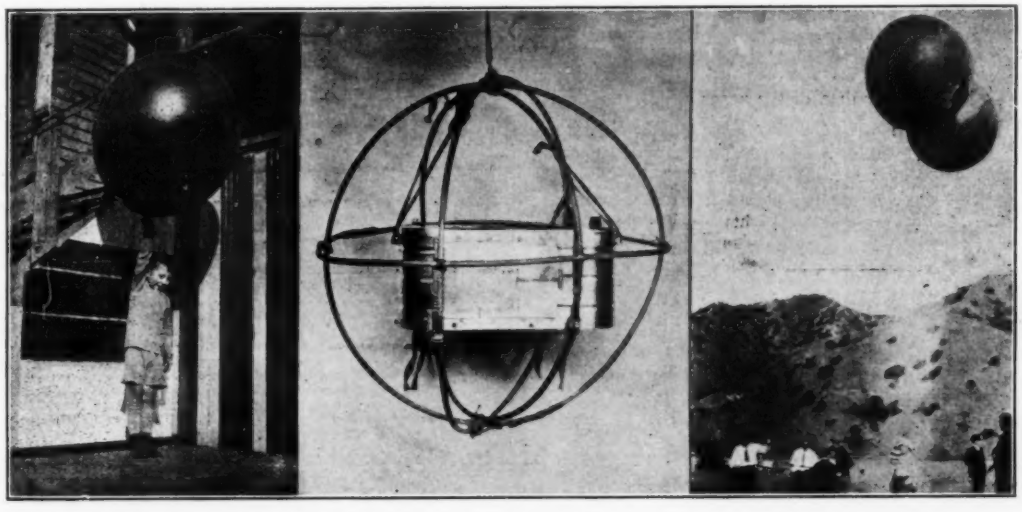
Interesting Details About Little-Known Rubber Products

By Norman Meadowcroft

In these days when aircraft and their engines have reached such a high state of perfection that commercial flying, involving long cross-country flights, is being developed rapidly, the possession of reliable and comprehensive weather reports is of the utmost importance to the aviator. Pilot balloons offer a quick and accurate means of determining air conditions before a flight, while sounding balloons enable the making of written records of exploration in the upper air for general information.

Every day, the year around, at meteorological, army and navy air stations throughout the world rubber pilot or sounding balloons are inflated with hydrogen gas and released in order to ascertain conditions of the atmosphere at varying heights above the earth's surface. These balloons have to be very carefully made in order to withstand the great expansion at several thousand feet above the earth.

As the balloons rise into rarer or thinner air the contained gas expands, causing a steady stretching of the rubber. In rising, a balloon expands approximately one-thirtieth of its volume every thousand feet, so that at 10,000 feet the gas contained needs one-third more space than it does at the time of release from the ground level; and at 30,000 feet the balloon must be twice as big in volume as its original size. When continued expansion brings a ballon to the limit of its strength the rubber gives way and the balloon bursts.



PILOT BALLOON INSTRUMENT CARRIER SOUNDING BALLOONS

Pilot Balloons

Pilot balloons are of a given weight and are inflated with hydrogen gas to an extent which gives them a certain free lift or buoyancy. With this lift known the rate of ascent is known and at calculated intervals, corresponding to every thousand feet, the angle which the ballon makes with the point of release on the ground, and the direction of travel, are measured by a special theodolite. This theodolite has vertical and horizontal circles, each with a vernier attachment, and from the readings of the angles, combined with the computed height of the balloon at each reading, the wind speed and direction may be determined. Sometimes two theodolites are used, one at each end of a measured base line, but more commonly only one is used.

Pilot balloons are usually 6 inches normal diameter, though sometimes the 7½-inch or even 9-inch sizes are used. They are released singly and without any recording apparatus, their use being in finding the wind speed and direction only as high as they can be observed. On going into clouds, for instance, no readings can be taken, but on clear days or with high clouds much valuable information is obtained by their use.

Although the average visibility of pilot balloons ends at about 16,000 to 18,000 feet above the earth, they have been observed as high as 49,000 feet. The rate of ascent of pilot balloons is around 700 to 800 feet per minute, the balloon of normal 6-inch diameter weighing from as low as 25 grams (.88 ounce) up to 50 grams (1.76 ounces). Different government departments have their own specifications regarding weight, the Navy, for instance, tending toward the heavier balloons of 40 to 50 grams, while the Weather Bureau uses balloons weighing from 25 to 35 grams. The weight, of course, controls the amount of expansion which the balloon is capable of, and as an illustration of this, a balloon expanded from the 20 inches or so diameter which it has when inflated at the ground to 36 inches at about 17,000 feet altitude holds more than fifty times its volume as a 6-inch balloon.

For varying conditions of sky, pilot balloons are made in each of three colors, viz.: plain pará, black and red, the one considered likely to be most visible under the conditions at the time of release being used.

Sounding Balloons

Sounding balloons are used for carrying meteorological instruments, such as thermometer, barograph, humidity recorder, etc., to heights above the clouds where it may be invisible to any one on the earth. These various instruments are combined in the

form of a recording meteorograph, the recording pen of each instrument writing a record on a smoked drum rotated by clockwork. The meteorograph is attached to the inside of a wicker frame or carrier which is suspended below the balloon. A printed card fastened to the carrier gives instructions to the finder how to return it to the station from which it was released.

Sometimes only one balloon is used, in which case a small parachute between the carrier and the balloon assures a safe landing after the balloon bursts, having reached its limit of expansion at extreme altitude. Two or three balloons are often used together, sometimes with a parachute and sometimes without it. In the latter case one or two of the balloons burst at extreme altitude, the remaining balloon allowing the carrier and meteorograph to descend slowly enough not to be damaged on striking the earth.

Sounding balloons are 12 inches or more in normal diameter, and their rate of ascent is from 700 to 1,000 feet per minute. Records show that altitudes of 90,000 feet, or 18½ miles have been reached and "sounded" by this means. Some balloon clusters have made tremendous speed. One landed at Duncansville, Pennsylvania, 297 miles from the McCook Field Army Airplane Station, only 2½ hours after being launched. One exploration recorded the tremendous cold of 86.9 degrees F. below zero at an altitude of 32,240 feet.

Not all the meteorographs sent out with pilot balloons are afterwards found, of course, for they sometimes land in forests and other wild land as well as in roads and dooryards. Some of them have been kept, damaged or destroyed by ignorant persons who found them. One woman carefully washed away the smoked records before returning the instruments. But a goodly percentage of the meteorographs launched are returned and the records thus obtained are used in tabulating data of the upper air.

The pilot balloon has sailed far higher than any airplane or man-carrying balloon. The records of temperature, pressure and humidity recorded at every point of the flight and the indirect deductions as to wind direction obtained assist in making weather forecasts for altitude and long distance flights and are invaluable to aviators.

Foreign Trade Circulars

Special circulars containing foreign rubber trade information are now being published by the Rubber Division, Bureau of Foreign and Domestic Commerce, Washington, D. C. The publications which give details of the rubber industry in some one country are marked with an asterisk.

NUMBER	SPECIAL CIRCULAR
*1037	"September French Tire Exports Decline."
*1038	"German Tire Exports, First Nine Months 1925."
1039	"Tire Exporters' Weekly News Letter."
*1041	"October Imports of Rubber Tires."
*1042	"French Tire Exports During First Nine Months of 1925."
*1043	"Canadian Tire Exports During October, 1925."
*1044	"Crude Rubber Reexports From the United States, Month of October, and Value Per Pound of Crude Rubber Imports, First Ten Months of 1925."
1045	"Tire Exporters' Weekly News Letter."
*1046	"British Exports of Automobile Casings During the Month of October, 1925."
*1047	"Rubber Footwear Exports From the United Kingdom During the Month of October, 1925."
1048	"Tire Exporters' Weekly News Letter."
*1049	"Italian Tire Exports During First Nine Months of 1925."
1050	"Comparative Tire Exports From the United States, Canada, United Kingdom, France, Italy, and Germany During First Nine Months of 1925."
*1051	"French Tire Exports During October."
*1052	"French Rubber Footwear Exports During October, 1925."

THE UTILITY MANUFACTURING CO., CUDAHY, WISCONSIN, specializing in the production of labor-saving machinery for rubber manufacturers, will be represented in Italy by M. R. Petrucci, who will make his headquarters at Via San Nicola, Dei Cesarini 42, Rome.

Rubber Trade Inquiries

The inquiries that follow have already been answered; nevertheless they are of interest not only in showing the needs of the trade, but because of the possibility that additional information may be furnished by those who read them. The Editor is therefore glad to have those interested communicate with him.

NUMBER	INQUIRY
706	Manufacturers of rubber set fur.
707	Dealers in turpentine.
708	Raincoat varnish.
709	Cloth to ply on sheet rubber to prevent sticking.
710	Manufacturer of electricians' gloves.
711	Hawkinson tire repair equipment.
712	Makers of rubber pedal pads.
713	Metal holders for pedal pads.
714	Makers of dipped rubber goods.
715	Importers of Kaolin.
716	Importers of Bauxite.
717	Manufacturer of demountable cushion tires.
718	Makers of Narco rubber reviver.
719	Apron feed for mixing mills.
720	Manufacturers of X-ray gloves.
721	Motor driven pneumatic tire testing machine.
722	Method of splicing rubber belting.
723	Dealers in soap bark.
724	Firms dealing in carnauba wax.
725	Manufacturers of rubber reducing girdles.
726	Makers of rubber toy novelties.
727	Manufacturers of golf ball molds.
728	Manufacturer of "Tire Life."
729	Machines for making tennis shoes.
730	Makers of rubber stamp equipment.
731	Rubber makers' rollers.
732	Manufacturers of zapote gum.
733	Coloring for dental rubber.

Foreign Trade Opportunities

Address and information concerning the inquiries listed below will be supplied to our readers through the Foreign Trade Bureau of The India Rubber World, 25 West 45th Street, New York, N. Y.

NUMBER	COUNTRY AND COMMODITY	PURCHASE OR AGENCY
17,963	Dutch West Indies—Automobile tires	Agency
18,008	France—Rubber hose, pump valves, clappers, sheets, and other industrial rubber artices	Agency
18,028	Denmark—Rubber sponges	Purchase
18,029	Netherlands—Rubber sponges and hard rubber articles	Agency
18,044	Germany—Rubberized cloth	Purchase
18,073	France—Rubber belting	Agency
18,092	Australia—Cotton cloths for tires, shoes, belting, etc.	Agency
18,118	Egypt—Pencil and typewriter erasers	Purchase
18,150	Germany—Rubber-soled tennis and sport shoes	Purchase
18,151	Netherlands—Rubber gloves for surgeons and nurses	Purchase
18,152	England—Tires for low-priced cars	Purchase and Agency
18,174	Germany—Mechanical rubber goods	Agency
18,215	Dutch West Indies—Automobile tires	Purchase and Agency
18,217	South Africa—Bathing caps	Agency
18,225	Finland—Bathing caps, shoes, and rubber sundries	Agency
18,228	Australia—Rubber novelty goods	Agency
18,253	Tunisia—Automobile tires	Agency
18,281	Bolivia—Balloons, waist belts, baby pants, bibs, and aprons	Purchase
18,282	Sweden—Silk and cotton-covered rubber sheeting	Purchase and Agency
18,286	Wales—Rubber soles and heels	Purchase
18,288	Uruguay—Garters and suspenders	Purchase
18,289	Germany—Hospital rubber sundries	Purchase

CALENDAR

Rubber Association of America, January 11, Hotel Commodore, New York, N. Y.

National Automobile Chamber of Commerce, January 9-16, National Annual Show, Grand Central Palace, New York, N. Y.

National Automotive Dealers Association, Atlantic District, January 11. East ballroom, Hotel Commodore, 10 A.M.-5 P.M.

Second World Motor Transport Congress, January 11-13, Roosevelt Hotel, New York, N. Y.

National Automobile Chamber of Commerce Dinner, January 12, 6.30 P.M. Hotel Commodore, New York, N. Y.

Society of Automotive Engineers, January 14, 1926. Annual Dinner, Hotel Astor, New York, N. Y.

Twelfth National Motorcycle, Bicycle and Accessory Show, January 18-23. New Madison Square Garden, New York, N. Y.

National Motor Boat Show, January 22-30. Grand Central Palace, New York, N. Y.

Society of Automotive Engineers, January 26-29, 1926. Annual meeting, Detroit, Michigan.

Chicago National Automobile Chamber of Commerce, January 30-February 6, 1926. National Annual Show, Coliseum, Chicago, Illinois.

Automobile Salon, January 30-February 6, 1926. Hotel Drake, Chicago, Illinois.

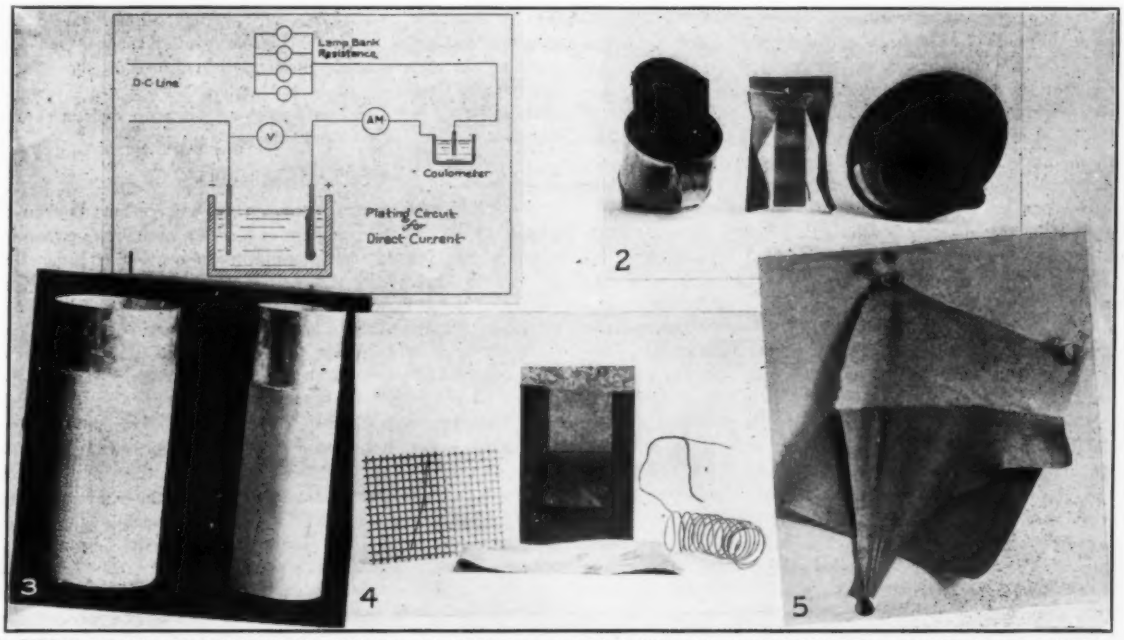
Electro-Plating Rubber

Pioneer Experiments—Compounding Ingredients—Plating Circuit for Direct Electric Current—Practical Applications in Rubber Manufacture

By S. E. Sheppard[1]

AT first sight there is something incongruous in the idea of electro-plating rubber. Rubber is a typical insulator, a substance which does not conduct the electric current, and it may be well asked, how can it be deposited electrically? The answer lies in the properties of colloidal solutions and dispersions. Rubber, primarily, is a milky fluid or latex which contains the rubber in the form of small globules, stably suspended in the liquid, just like the fat globules in milk.

Rubber latex resembles many other stable suspensions of solid and liquid particles. Almost any solid or liquid substance which is insoluble in water can be made, if finely divided sufficiently, to give a suspension or emulsion in water. The particles in these suspensions are usually electrically charged. This means that if two electrodes are placed in a suspension and an electric current applied the particles will tend to move to one or other electrodes, depending on whether they are positively or negatively charged.



(1) DIRECT CURRENT ELECTRO-PLATING CIRCUIT. (2) RUBBER P LATED METAL CUP PARTLY STRIPPED — PLATED SHEET TWISTED TO SHOW THROWING POWER—PLATED METAL PAN PARTLY STRIPPED. (3) RUBBER DEPOSITS ON ANODES ROTATING 1 AND 7 R.P.M. (4) RUBBER PLATED WIRE GAUZE, SHEET METAL, 20-GAGE WIRE, AND MERCERIZED FABRIC. (5) RUBBER ELECTRICALLY DEPOSITED ON FABRIC

Early Experiments With Latex

In 1907, the writer was working in the laboratory of physiological chemistry of the Sorbonne University, Paris, on the properties of colloids. At that time he was much interested in the experiments of M. Victor Henri, on the properties of some rubber latex solution, this being some of the first latex that had been successfully transported to Europe. Henri showed that the rubber particles in latex were negatively charged and moved under an electric current (in an electric field) in the direction of the positive pole or anode. The writer was not at that time directly interested in the technical developments of rubber, but many years later, when working in the Research Laboratories of the Eastman Kodak Co., upon the technical possibilities of aqueous suspensions and emulsions, this observation of Henri came back to his mind. It raised the question, if the particles in rubber latex can be electrically transported, can they not be electrically deposited, in other words, electro-plated? At that time rubber latex was still relatively rare and by no means easy to obtain. It appeared, however, that it should be possible to convert rubber artificially into an emulsion or suspension in water, having similar properties to those of rubber latex. The writer and L. W. Eberlin, therefore, prepared emulsions of rubber in water by mixing a solution of rubber in organic solvents such as benzol, in other words, a thin rubber cement, with an aqueous solution of soap and other emulsifying agents. This mixture was subjected to intense mechanical agitation and homogenized by spraying at high velocities through baffles. In this way an approximately 5 per cent aqueous suspension of rubber was obtained, and it was considered that being prepared with a medium of alkaline reaction that the particles should be negatively charged. On applying an electric current this was found to be the case and it was further found possible to deposit the rubber upon the positive pole or anode. A little later a similar result was obtained using some rubber latex, and electro-deposition was therefore possible.

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Compounding Electro-Plated Rubber

It is still, however, a long cry from this to a practical application. It is not enough that rubber alone should be plated out electrically, even if a smooth uniform coating could be obtained. For real use rubber must be vulcanized. Such electrically deposited coatings, if thin enough, might be vulcanized in the wet way by the use of sulphur chloride. Vulcanization in this manner has, however, a very limited application. It was essential that rubber should be produced similar to the rubber compounds which have been developed in the course of rubber technology since Goodyear's discovery. This meant that it must be possible to deposit rubber electrically and uniformly mix in with the rubber particles, sulphur, mineral and organic fillers, softeners, accelerators, pigments, etc., according to specific requirements.

This means that these ingredients must also be reduced to an extremely fine state of subdivision and approaching colloidal dimensions, if not always attaining these. The particles in rubber latex and in artificial rubber dispersions are of the order of 1μ (one micron) in diameter, that is, 1,000th of a millimeter, or 1-25,000th of an inch. Many of them are larger than this, running up to 2 or 3μ, many are again smaller, down to perhaps 1-10μ. It is necessary that the sulphur and other substances be brought to a comparable state of subdivision if they are to be uniformly mixed with the rubber particles.

There are, however, other conditions to be met beside that of subdivision. It has already been explained that solid or liquid particles in contact with water or water solutions take on an electric charge which may be positive or negative. If a substance of negatively charged particles is mixed with one of positively charged particles, they will neutralize and precipitate each other. Such conditions of stability must therefore be prevented in preparing mixtures of rubber latex or a rubber emulsion with suspensions of the finely divided sulphur, pigments, etc. Fortunately no great difficulty exists with sulphur, since it readily assumes a negative charge and is easily wetted by alkaline solutions. On the other hand, some fillers and pigments offer difficulties. However, the following pigments are readily compounded in the wet way with a rubber latex or suspension: litharge, zinc oxide, lithopone, whiting, titanox, antimony pentasulphide, magnesium, carbonate, asbestine, clay, baryta, and colloidal metals. A very important filler is carbon, particularly as gas black. Many forms of gas black are refractory and difficult to handle in compounding in the wet way. We have, however, succeeded in obtaining certain gas blacks in aqueous suspension which can be incorporated with the rubber without difficulty. Again, no great difficulty is experienced in wet mixing any softening or conditioning agent desired, such as vegetable or metal oils, asphalts, pitches, waxes, resins or the like. Finally, accelerators may be similarly incorporated. In general these are insoluble in water and can be dispersed by precipitation from organic solvents miscible with water. In compounding these ingredients, the mix is homogenized in the wet way before incorporating with the rubber latex or emulsion.

Direct Current Plating Circuit

A simple electro-plating circuit is illustrated in Figure 1, using direct current. While voltage and current density are varied somewhat to suit the particular problem, 30 volts and a current density of .3 amperes per square inch represent average conditions. Actually variations of voltage from 5 to 105 volts, of current density from .05 to 1.00 amperes per square inch have been used successfully. In plating from a composite bath such as described above, it is an important matter that the materials plate out uniformly, i. e., that there is not a selective action. Experiments directed to this point showed that under proper conditions of mixing, the plating out was remarkably uniform, the bath exhausting evenly. Platings of rubber compositions containing up to 50 per cent non-rubber have been made in this manner.

The thickness of rubber or rubber composition which can be laid down by this process is limited, but in view of the non-conducting character of rubber itself the thicknesses attainable are surprising. We have measured the thickness of the sheets after drying and vulcanization, and obtained deposits up to .25 inches. The reason that a deposit of such thickness can be built up is that the original electro-coagulated deposit is porous and still impregnated with conducting fluid which permits diffusion of electrolytic ions.

Throwing Power

By throwing power is meant capacity of an electro-plating process to cover edges, fill in recesses and angles. In this respect the process is very satisfactory, as is shown by the examples in Figure 2. Adequate but not excessive motion is of importance in securing evenness of coating, as is shown in Figure 3, which illustrates deposits on rotating anodes run at 1 r.p.m. and 7 r.p.m. The latter was much more uniform.

Strength and Wearing Properties

It is a point in favor of the process, in so far as original latex is used, that the rubber deposit is one of primarily coagulated rubber which has not been subjected to breaking down incident to milling on rolls. Here it may be noted that preliminary comparisons of sheets containing 19 per cent mineral filler, 4 per cent free sulphur, and 3 per cent combined sulphur gave superior strength and tenacity (1600 pounds to the square inch) compared with an average commercial sheet (1000 pounds to the square inch) having .7 per cent filler, 1.2 per cent free and 3 per cent combined sulphur. Keeping tests of over six months have shown little or no deterioration.

Applications

The process of electro-deposition rather supplements than competes with existing methods of handling rubber, just as the electro-deposition of metals supplements conventional metallurgy. It permits, firstly, direct deposition on metals, whereby a variety of useful and decorative coverings are possible. In Figure 3, and again in Figure 4, are shown some of these applications, such as covering metal articles, wirescreen, wire, etc. Specific examples, other than those illustrated, are the rubber lining of pipes, tanks and containers, the covering of small metal articles such as field glasses, spectacle cases, cameras and other sundries.

Coating and impregnating fabrics is another important application. If a fabric, such as cloth or paper, which is permeable to electrolyte, is stretched over the anode, the rubber coating is plated out on this instead of upon the metal. An example is shown in Figure 5. These coatings may be varied from a very light to a quite thick rubber coating, and made, after vulcanizing, quite impermeable to water. Specific applications of this are the coatings of fabrics for automobile tops, waterproof garments, etc. After the original paper on this subject was read at the Baltimore meeting of the American Chemical Society, some of the newspapers made us state that it was now possible to electro-plate finished garments with a seamless rubber coating! This was a journalistic exaggeration, but the process certainly has great possibilities in the treatment of fabrics and, with certain modifications, of paper and other porous materials. Finally, although the process only permits direct deposition of sheets of limited thickness, these sheets can be readily stripped and while still plastic, indissolubly laminated or molded. It may be mentioned that the plastic condition of the original deposit readily permits graining and embossing.

AMERICAN EXPORTS OF RUBBER TOYS, BALLS, AND BALLOONS ROSE from a total value for the first ten months of 1924 of $807,847 to $1,082,265 for the corresponding period of 1925. The amount exported during the 1924 period totaled 789,252 pounds, the 1925 figure being 889,978 pounds.

Hard Rubber for Radio Insulation

Essential Characteristics That Render It Superior to All Substitutes

THE radio enthusiast who builds his own receiving set does so for one of three principal reasons. First, there is the enjoyment and satisfaction of personal accomplishment. Second, there is the saving in cost, manufacturing profit and a large proportion of the retailing profit being eliminated. Third, there is the possibility of getting a satisfactory set for less money, or a better set for the same money. This third reason applies not only to the matter of getting the exact hook-up desired, but to the possibility of having the set constructed of preferred parts and materials.

While there are many commercial receiving sets on the market that seem to leave little to be desired, some manufacturers, unfortunately, either for the sake of economy or through ignorance, do not use high-grade radio parts. Just as a chain is only as strong as its weakest link, so a receiving set is as good as its poorest part. This is particularly true of the insulation employed, which is a matter of the utmost importance in receiving set construction. Both the volume and the quality of radio reception depend to a considerable degree on the electrical properties of the insulation. Radio currents are relatively weak but of high frequency, presenting conditions totally different from those encountered with ordinary commercial electric currents.

Essential Characteristics and Available Materials

The essential characteristics for any radio insulation are as follows: (1) its phase difference angle or power factor; (2) resistivity, both surface and volume; (3) dielectric constant or specific inductive capacitance; (4) moisture absorption; (5) mechanical or working properties.

The insulation materials available for radio purposes may be classified under three general heads, viz.: hard rubber compounds, phenolic materials and shellac compositions. Within limits determined by the nature of the materials and methods of production all may be varied somewhat in order to obtain desirable electrical or physical properties.

Superiority of Hard Rubber

In the first four essential characteristics mentioned above hard rubber specially produced for radio purposes by recognized manufacturers is superior to all other insulating materials. It also excels in most mechanical properties. Moreover, it usually costs less than competing materials. It follows that there is no comparable substitute.

Anybody can manufacture hard rubber, there being no patents covering it. Under these conditions the great demand for radio parts has led some inexperienced persons to undertake their production with indifferent success. However, those well-established concerns which compose the Hard Rubber Manufacturers' Division of the Rubber Association of America have had long experience in the manufacture of parts and materials for special purposes, including wireless telegraphy, for which hard rubber insulation is still used extensively. Neither time nor expense has been spared in the technical research work necessary to determine every radio requirement and how to meet it, not only for high frequencies but for short wave lengths (1 to 50 meters) which promise to come into use for general broadcasting. These recognized manufacturers are pledged to maintain such a high quality for their products as to maintain fully the unrivaled position of the best hard rubber radio insulation among competitive materials.

Radio hard rubber, as produced by these experienced manufacturers, consists of the purest crude rubber, the finest rubber dust, sulphur and mineral fillers, the whole being compounded and chemically combined by expert vulcanization to secure the necessary physical and electrical properties for panels, dials, sockets, tubes, condenser ends, binding post strips, insulators, etc.

Phase Difference Angle or Power Factor

Upon individual consideration of the five essential characteristics of a good radio insulation, previously enumerated, it will be seen that as no material is a perfect insulator the term "insulation" is only relative. Phase difference angle or power factor offers the best means of rating the quality of a radio frequency insulating material. In a perfect condenser the current would be 90 degrees out of phase with the impressed voltage. But with no insulating material available the current is not quite 90 degrees out of phase with the voltage because of the absorption of power in the insulating medium between plates in the form of heat.

This difference between the actual angle and 90 degrees is called the phase difference and is a direct measure of the power loss or dielectric absorption. This power loss introduces resistance into the circuit and diminishes selectivity. Power factor (cosin of the plate angle) in per cent is 1.75 times the phase difference angle in degrees.

The phase difference angle of hard rubber is only 0.45 degrees, increasing only slightly at the higher frequencies. With other insulating materials having phase difference angles of 2.0 degrees to 3.7 degrees or more, the advantages of hard rubber are fully apparent.

Resistivity

Resistivity is the term denoting the relative resistance to the flow of currents through a material or across its surfaces. The highest possible volume and surface resistivity are essential in any insulating material intended for radio purposes. Resistivity is measured upon a unit cube of material one centimeter or one inch on each side.

Radio hard rubber has a volume resistivity of 100 million megohms per cubic inch, usually expressed as 1 by 108 megohms per inch. The nearest competitive material is rated at 1.4 by 104 to 2.2 by 106, or considerably less resistive. Resistance to leakage across the surface of an insulating material, as between binding posts on a panel, is dependent somewhat upon the character of the surface as well as of the material itself. Radio hard rubber is therefore produced with a highly polished surface, greatly reducing the tendency to absorb atmospheric moisture and increasing surface resistivity correspondingly.

Dielectric Constant or Specific Inductive Capacitance

Either of these terms denotes a relative value as compared to air, taken arbitrarily as the standard at a value of 1, which a material has with respect to its ability to act as a dielectric between the plates of a condenser. Two plates separated by air, when charged with an electric current at a certain potential, are able to receive and hold a certain quantity of electricity. The capacity of this condenser is a measure of the quantity of electricity it can receive. Upon substituting an insulating material for air the capacity of the condenser is increased, all conditions being equal. The ratio of the capacity, with the insulating material acting as the dielectric to the capacity with air as the dielectric, is called the dielectric constant or specific inductive capacitance and is indicated by a number. Insulating materials for radio purposes should have as low a value as possible in order to reduce the capacity between binding posts and other conducting parts of

the set. A high value means heavy displacement currents and energy loss.

The dielectric constant of radio hard rubber is 3.5 at 1,000 cycles and decreases with the increase of frequency. At 1,000,000 cycles (300 meters) the figure is about 2.75. Above 300 meters the decrease is very gradual. Even at the lower wave lengths the superiority of hard rubber over other insulating materials is apparent.

Moisture Absorption

As water is a good conductor of electricity, any atmospheric moisture absorbed by an insulating material greatly impairs its resistance to the passage of an electric current. The amount of moisture absorbed by radio hard rubber is practically negligible. In air it is only .005 to .02 per cent and in water .08 to .11 per cent. By contrast the moisture absorption of the best other materials in air is .28 to .49 per cent and in water 1.42 to 7.81 per cent.

Mechanical or Working Properties

Combined with the superior electrical properties of radio hard rubber are excellent mechanical properties. Its beautifully smooth, highly polished surface finish is comparable to that obtainable on hard woods, making it the ideal panel for high-grade cabinets. It may be drilled and tapped with ordinary home tools without danger of breaking or chipping. It may be cut with an ordinary hack saw, although all the ordinary commercial sizes are obtainable without cutting. It may be machined easily and accurately. It is absolutely non-porous and never affected by ordinary acids or alkalis. It is permanent in its chemical and mechanical structure. It has sufficient strength and rigidity so that if correctly mounted in a cabinet it will resist any tendency to bend or warp.

Manufacturers of receiving sets in ever increasing numbers are using hard rubber radio parts and panels. Competition is now chiefly on the basis of quality, which demands the superior insulation properties of hard rubber in high-grade sets. Experience is also showing that there is economy not only in the purchase price of hard rubber but in its use, the losses due to damage in working it being negligible.

FIRST GREEK RUBBER MANUFACTURING COMPANY

The Rubber Co., Inc., with its main office at the Piraeus, is the first company of its kind to be established in Greece. The organization will manufacture rubber goods, especially tires.

LARGE INCREASE IN BRITISH TIRE EXPORTS

During the first nine months of 1925 the United Kingdom exported 650,731 automobile casings, including those mounted on chassis, this figure comparing with 550,263, the total for the entire year 1924. This represents an increase of 57.8 per cent, a more rapid advance than for any other important tire exporting country. (Official statistics.)

FRENCH RUBBER FOOTWEAR EXPORTS

During the first nine months of 1925 France has exported all classes of rubber footwear to the amount of 2,443,300 kilos, gross weight. According to the Department of Commerce, the trade has been unimportant except for shipments to European markets and the French Possessions. The leading customers for these goods included: United Kingdom, 372,700 kilos; Rumania, 368,000; Turkey, 354,900; Belgium and Luxemburg, 231,700; Switzerland, 178,800; Bulgaria, 143,400; Italy, 137,200; Netherlands, 112,500; Syria, 108,400; Algeria, 66,800; and Egypt, 61,300.

AMERICAN EXPORTS OF RUBBER THREAD DURING THE FIRST TEN months of 1925 totaled 1,198,238 pounds, value $1,425,655, as compared with similar figures for 1924 of 973,946 pounds, value $1,057,685.

Wholesale Distribution Costs of Rubber Goods

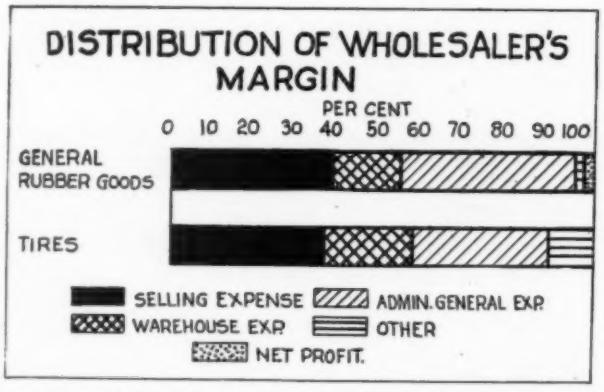
The National Distribution Conference held under the auspices of the Chamber of Commerce, Washington, D. C., appointed a committee of business men to study the distribution of goods. The report of Committee IV on "Expenses of Doing Business" contains the following information regarding wholesale distribution costs of tires and general rubber goods.

Interesting and significant comparisons may be made between selling and warehouse expenses. The generally accepted definition of a jobber's function emphasizes warehousing stocks for retailers, rather than sales exploitation activity. However, all jobbers have considerable sales expenses. Where competition is keen and where specialties are handled, selling expense is far in excess of warehouse expense. This is conspicuously true in rubber goods.

The following tabulation shows the common operating expenses in wholesale business, and expressed as a percentage of net sales.

	General Rubber Goods	Tires
Direct Selling Expenses:		
Total Sales Force Expense	5.26	4.34
Advertising	0.08	0.91
Other Selling	0.16	0.14
Total Direct Selling Expenses	5.50	5.39
Warehouse Expense:		
Wages of Receiving and Shipping Force	1.15	0.91
Packing, Cases and Wrappings	0.10	0.38
Outward Freight, Express and Truckage	0.94	1.85
Total Warehouse Expense	2.19	3.14
Administrative and General Expense:		
Total Executive and Office Salaries	2.89	2.16
Office Supplies, Postage and Stationery	0.65	0.54
Telephone and Telegraph		
Rent, Light, Heat and Power	1.20	0.74
Insurance		
All other management and general expense	0.71	1.04
Losses from bad debts	0.47	0.43
Total Administrative and General Expense	5.92	4.93
Other Charges:		
Repairs and depreciation of equipment and buildings	0.16	0.05
Taxes, including local, State and Federal	?	0.58
Interest paid or chargeable	?	0.74
Total Other Charges	0.16	1.37
Total Expense	13.77?	14.83†
Margin	14.17	?
Profit	?	?
Stock turn times per year	3.85	4.65

†Excluding office salaries.



If the jobber's economic function is primarily that of a warehouseman, it would appear from these figures that selling expenses are among the first to be considered as a place where savings might be effected. There is, no doubt, considerable wasteful competitive sales effort, and much unnecessary traveling and calling on the retail trade beyond what is required for economic service to the retailer. A good deal of this is due to the present highly competitive state of distribution, but it is a situation which should be recognized in a study of the economics of distribution.

Fiberized Latex Crêpe Soling

EARLY in the development of the rubber industry much study and experimentation was devoted to seeking practical methods of impregnating fabrics with latex for waterproofing effect. In this connection Thomas Hancock, early English rubber inventor and manufacturer, bonded all sorts of fibers together. In his day, however, no method was known for preserving rubber latex from coagulating and thus manufacturing by latex impregnation was of necessity abandoned.

Practically all applications of fluid latex rubber to fiber have been in the nature of providing a rubber bond for the fiber. From the physical characteristics of the resulting material, one may consider that a product having fiber in amount equal to or greater than the rubber as being cemented fiber, and material having rubber in excess of fiber as being reinforced rubber. The fiber here referred to is always relatively long fiber in contradistinction to short fiber cotton or other flock such as is commonly used in rubber compounding, or such as results from refining rubber and rag mill stock.

If rubber be reinforced by long fiber, its physical characteristics, under strain, are in the first instance substantially those of rubber alone, but the characteristic stress-strain curve changes sharply as the reinforcing fiber comes into play.

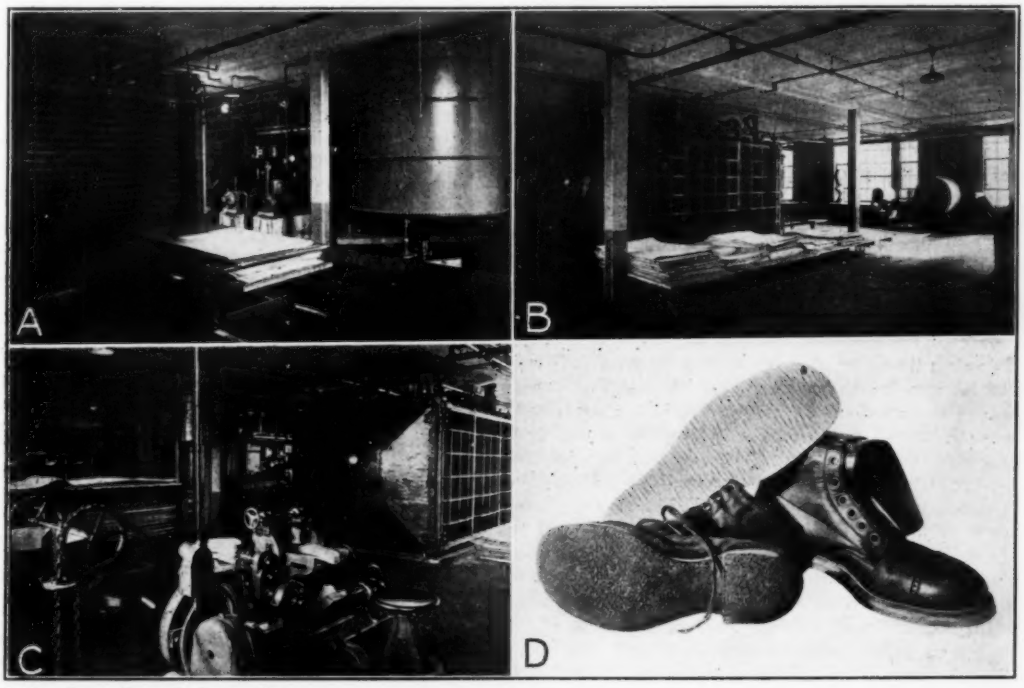
A new soling material is now being manufactured direct from fiber and rubber latex. It has the character of reinforced pure gum with the addition that the fibers are so crumpled or crêped in one direction as to extend the normal stress strain curve in one direction. Thus the soling shows greater flexibility and extensibility lengthwise than crosswise.

The optimum ratio for soling material is found to be 75 per cent rubber and 25 per cent long fiber. Either cotton or ramie may be used. While a mass of fiber may be saturated with latex and the whole dried to yield solid rubber including the fiber, this is of very doubtful commercial feasibility except in very thin layers as it is practically impossible to maintain a uniform distribution of the rubber through the drying stage. Where less than 50 per cent rubber is used a uniformity of distribution is more readily maintained but as the rubber ratio rises the uniformity of distribution becomes more and more uncontrollable. Vacuum drying is feasible only in the last stage after the rubber globules have coalesced as any application of low pressure before this inevitably involves severe frothing. Rapid acid coagulation involves no such difficulty, and so far as known the process here described is the first to use acid coagulation to "set" the rubber in uniform distribution throughout a fiber aggregate.

The fiber used in the manufacture of the new soling material is made up into a bat somewhat resembling the "felter's pad." Usually just enough wool is added to the cotton to give a certain desired "loftiness" which permits the fiber mass to hold the requisite amount of latex. For a 75 per cent rubber, 25 per cent cotton product and using a normal 35 per cent latex, it follows that the fiber mass must carry 800+ per cent latex. This is obviously far beyond the amount which a fiber mass will retain by capillarity. At this stage acid is so applied as to surface seal the saturated pad.

This surface film of coagulation rubber permits the mass containing fluid latex to be carried through an acid coagulating bath where the coagulation of the rubber within the mass is completed.

The general view of the factory equipment here pictured shows the practical means for carrying out the steps of impregnation, washing and drying which are detailed as follows:



Rubber Latex Research Corporation.

(A) LATEX TANK, VACUUM DRYER, PUMPS, AND WET SHEETS OF SOLING. (B) ROLLS OF COTTON PAD, DRYER, AND FINISHED SHEETS OF SOLING. (C) DRYER, SOLE CUTTER, SKIVER, AND STOCK SHEETS READY FOR CUTTING. (D) WESCOTT CRÊPE SOLE, APPLICATION TO HEAVY SPORT SHOE, SOLE TESTED IN MOUNTAIN CLIMBING.

The cotton pad about three feet wide and of any desired length is unrolled from a special truck into the impregnating machine where it is compressed and expanded under latex. It is next acid treated on the surface, and conveyed into the acetic acid coagulating bath. The pad flows through the impregnating machine at the rate of about 6 to 10 a minute. On some of the heavy weight material as much as 12 gallons of latex a minute is carried over by the supersaturated pad.

Coagulating rubber from latex has many advantages over drying, quite apart from the manufacturing aspect mentioned above. One of these advantages is that the resulting rubber has much greater "nerve" than a dried down rubber gel, dried down rubber having more the characteristic of milled crude. Another advantage is that the resulting mass is porous, containing as it does the 65 per cent latex serum. This porosity admits of thorough washing, quite independent of the thickness of the material to be washed. The washing of a dried down rubber containing fiber is not possible in substantial thicknesses without mechanical destruction of fiber length. In the spongy, coagulated rubber mass of this process, however, washing is readily accomplished without in any way disturbing the fiber-rubber relationship. This washing step is obviously necessary to remove traces of acid and has the added merit of removing the proteids, carbohydrates, salts and other water soluble non-rubber constituents of latex. These non-rubber constituents must be removed if the end product is to be of light color and if oxidation is to be avoided in the drying operation.

The washing step is accomplished by passing the mass through a series of even speed rolls which, acting as wringers, squeeze out the contained fluid serum which bursts through the walls of the cellular rubber structure. While the pressure is great enough to expel most of the fluid contained, it is not enough to cause adhesion of the wet rubber surfaces and consequently the material expands on emerging from the rolls, and in expanding absorbs the wash water then applied. The amount of wash water taken up is but slightly less than the serum expressed. A continuous passage through several such wringer rolls is sufficient to accomplish a substantially complete removal of all traces of acid and non-rubber constituents of the latex. No water is applied when the material emerges from the last set of rolls. This last set of rolls wrings the material as dry as may be.

This washing step has the further great advantage of supplying small ducts through from the surface to the interior cells by which the material may be effectively and rapidly dried. It is obvious that such a spongy cellular structure has an enormous interior surface, with nowhere any thick mass of rubber. The wrung-out spongy mass is then placed in a shelf vacuum dryer and dried at about 150 degrees F. and at as high a vacuum as may be. The drying time bears some relation to the thickness but owing to the cellular structure the drying time is more closely related to the capacity of the apparatus than to the thickness of the material. In general, drying material which when compressed is one-half inch thick requires approximately six hours.

While the dried material is still warm it is passed through even speed rolls so set as to compress and weld the rubber into a solid mass but not to strain the fiber beyond its elastic limit. The compressed material if destined for shoe soles is then put through a pair of uneven speed rolls for the purpose of crumpling or crimping the fibers in one direction. If on the other hand it is destined for belting, and vulcanizing agents have been incorporated with the rubber, the material goes directly to the hydraulic curing press. In the case of belting, the belt is usually made up of one or more plies of duck as well as the pad fiber, the combination being carried through the impregnation machine as a unit.

From the shoemaker's standpoint this soling material has practically all of the advantages of leather on the one hand with the resiliency of rubber on the other. As it is fiber reinforced crosswise there is no tendency of the shoe to spread. The fibers running in all directions permit very close stitching, twelve stitches to the inch being entirely practical. The sole may be channeled, skived and in all ways manipulated as though it were leather. From the standpoint of the wearer the sole has all the advantages of rubber over leather, namely, resiliency and waterproofness, without the disadvantages of slipperiness when wet and unsightly deformation with wear.

The trouble with a high grade, tough plantation sole is not that it wears out but that it spreads, rolling up at the edges and through displacement and wear becoming thin under the foot. Furthermore its extreme extensibility permits the wearer to be unduly conscious of pebbles under the foot. The new process material reinforced as it is with long fiber does not spread. It yields less than the crêpe sole and offers much greater protection against stones and roughness under foot. The presence of the fiber so diminishes the tendency to slip when wet as to give the wearer great assurance and a sure footedness matched by no other sole, with the possible exception of the rope soling popular in South America.

The product can be formed in any thickness for heels or soles and many attractive colors may be obtained either by coloring the fiber itself or adding suitable dyes to the rubber latex or both.

UNITED STATES IMPORTS OF RUBBER GOODS—1924

According to E. G. Holt, assistant chief of the Rubber Division, Department of Commerce, the United States imported in 1924 rubber products to the value of $3,835,539, about 9.4 per cent of the value of American exports in that year. Although these imports supply only about four-tenths of 1 per cent of the domestic consumption of rubber goods, which is estimated at close to $1,000,000,000 annually, there are individual classes of imported rubber products that command a large share of the American market.

First among such imported goods are golf balls, the number purchased in 1924 by the United States being 2,843,712. Of this amount England supplied 2,629,939; France, 113,683; and Scotland, 89,194. It is estimated that around 25 per cent of the American trade in golf balls is supplied by imports. The average invoice value per ball during 1924 was about $0.373.

Serious competition is also met by American manufacturers in the market for certain hard rubber goods, particularly combs, the customs records for April and May, 1925, showing that about 80 per cent of the hard rubber goods received from Germany and Austria included such combs. During 1924 the total imports into the United States of hard rubber goods amounted to 364,407 pounds, value $438,229. In this trade Germany furnished 155,475 pounds, value $207,432, and Austria 182,535 pounds, value $215,950. France represented the chief source of supply for automobile tires, these being mainly 31 by 4.40 interchangeable balloon tires, clincher, for use on 23-inch wheels. Scrap rubber imports come largely from Canada, with smaller quantities from England, Germany, France, Italy, Scotland, and the Netherlands—all countries with well-developed rubber manufacturing industries.

UNITED STATES IMPORTS OF RUBBER PRODUCTS DURING 1924

Commodity	Quantity	Value
Rubber tires ..... number	183,481	$1,097,085
Rubber belting ..... pounds	582,096	397,867
Hard rubber goods ..... pounds	364,407	438,229
Golf balls ..... number	2,843,712	1,060,102
Tennis balls ..... number	34,215	4,998
Druggists' rubber sundries ..... pounds	95,594	119,453
Rubber toys and balloons ..... pounds	56,385	22,345
Rubberized piece goods ..... square yards	100,099	57,050
Insulating material ..... pounds	40,678	5,854
Reclaimed rubber ..... pounds	317,387	15,340
Scrap rubber ..... pounds	10,734,831	233,787
Other rubber manufactures ..... pounds	422,631	350,525
Other gutta percha manufactures ..... pounds	60,749	32,904
Total	.....	$3,835,539

Balata and Rubber Machinery Belting[1]

Balata Belting

Types of Machinery Belting—How and Where Balata Belting Is Made—Its Place in the Trade—Uses and Advantages of Balata Belting

THERE are three types of machinery belting—transmission, conveyer and elevator. Transmission belting is used to transmit power from power-generating machines to power-consuming machines. Conveyer belting is used to carry materials from one point to another on the same level or where a gradual lift is involved, with the minimum of manual labor. Elevator belting is used to raise materials from a lower to a higher level; the containers for the substances carried usually being buckets bolted or fastened to the belt.

Types and Advantages

Balata belting, like rubber belting, is produced for transmission, conveyer and elevator service. All balata belting is of the straight-ply type; that is, of uniform thickness in the body of the fabric. It is impregnated with a solution of balata gum, the product of a South American tree possessing qualities similar in some respects to rubber and in other respects to gutta percha, and is not vulcanized in process of construction. Since the fabric is impregnated instead of coated with a compound, as in the case of rubber belting, it is not possible to apply a cover to this type of belting.

Manufacturers state that balata belting is absolutely waterproof, and further, that the balata does not deteriorate, which makes it possible to carry the belting in stock to advantage. Owing to the extra heavy duck used in the construction of high-grade balata belting, it has very little stretch, thereby reducing the necessity of take-up. It is customarily and satisfactorily joined by any of the metal fasteners on the market and can be made endless by means of a step-lap, though step-lap joining is not frequently practiced by users in the United States.

Transmission Belting

Balata transmission belting is constructed from plies of extra heavy cotton duck, impregnated with a solution of balata gum. High-grade balata belting is made of 40-ounce duck, this weight applying to a section 36 by 42 inches. Balata transmission belting is successfully used where constant belt shifting is not necessary, where the temperature is less than 110 degrees F., and where it does not come in contact with mineral oils. Where the belt is constantly subject to slippage, a high temperature may be developed from friction; this condition of service is, however, almost equally injurious to any belt. Since balata belting is not vulcanized, the gum softens when exposed to excessive heat. Aside from the above cases, balata belting is used satisfactorily for the transmission of power.

Elevator and Conveyer Belting

Manufacturers of balata elevator and conveyer belts recommend them for use under the same severe conditions of service as rubber belting; for example, in sand and gravel plants, brick, clay and tile plants, cement mills, stone and marble quarries, canneries, rice and sugar mills, flour mills, etc. The extra heavy duck used in construction tends to make a very firm and compact finished article, thus reducing the possibility of bucket bolts pulling out on elevator belts. Balata is tasteless and odorless, which makes the belting suitable for conveying food products. The waterproof qualities of the belting prevent deterioration from puncture and render it suitable for handling wet materials and for outdoor service. High-grade belting of either balata or rubber will wear down ply upon ply, making it possible to get the maximum of service from the belt. Balata belting lacks the extra abrasive cover of rubber belting which is desirable in the most severe conveying work.

Price of Balata Belting

The higher price of balata belting over rubber belting, according to American manufacturers, is due to the higher cost of crude balata over crude rubber and to the extra heavy duck used in its construction. In recent years the average price of crude balata per pound has been more than double the average price of crude rubber per pound, and the higher cost of materials is naturally reflected in the price of the finished product. The use of heavier duck for balata than for rubber belting is not universal in European practise, although standard makes of balata belting are so constructed.

Balata Belting in the Trade

Throughout the world except in the United States and Canada balata belting is used fully as widely as rubber belting. The relatively small share of balata belting used in the United States is due to the fact that only four concerns manufacture it, as compared with some thirty concerns manufacturing rubber belting. Indeed, its production has been discontinued in favor of rubber belting by several rubber manufacturers who formerly produced it.

Balata belting is manufactured chiefly in the United Kingdom, Germany, Czechoslovakia and Norway, but many other European countries have small balata belting industries of considerable local importance. In the countries named more balata belting is produced than rubber belting and their export trade in this product is particularly well established. Balata belting has been a strong competitor in international trade for a longer period than rubber belting, having been introduced widely by British and German manufacturers particularly, long before American rubber manufacturers began actively to cultivate export business.

Since the trade statistics of all countries classify rubber and balata belting together, separate figures cannot be given. Relatively little balata belting is produced in France and none in Italy, Canada, or Australia. Germany and France rank about equally in the trade in balata and rubber belting and are close competitors, German companies, however, specializing more in balata belting than in rubber and French companies specializing more in rubber than balata. British manufacturers of balata belting particularly hold a strong position in world markets, although since 1920 the British trade has been more seriously affected by European competition than has the American.

AMERICAN EXPORTS OF PNEUMATIC CASINGS REACHED THE HIGHEST point of the year during August when the total number of casings shipped was 167,879, value $2,197,972. The United Kingdom was the best customer, taking 23,249 of these tires, value $283,160, followed by Sweden, Argentina, Denmark, and the Philippine Islands. September exports included 155,614 casings, value $2,175,981.

[1]Abstracted from "International Trade in Machinery Belting," Trade Promotion Series No. 22, Bureau of Foreign and Domestic Commerce, by E. G. Holt, Assistant Chief, Rubber Division.

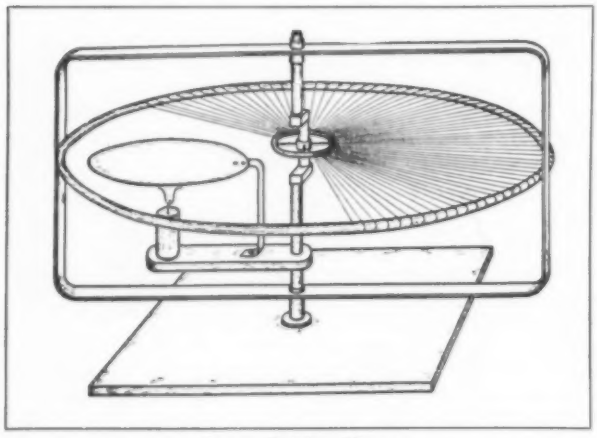
Rubber Heat Engines

Application of the Joule Effect in Rubber

At his recent lecture on "Rubber Compounding Tendencies" before the Institution of Rubber Industry, London, England, W. B. Wiegand exhibited two forms of rubber-heat engines or motors, one rotary and the other reciprocating.

The rotary motor comprises an outer ring supported on a frame revolvable around the main axis. An inner ring revolvable around another axis, eccentric to the main axis, is connected to the larger ring by stretched rubber bands. When the two rings are made to revolve about their axes, each rubber band will traverse a cycle of expansion and retraction.

Heat is radiated from a small plate, warmed by a candle, against a section of the bands at a point shortly after they reach their greatest stretch. It is then that the Joule effect becomes operative and the bands contract, the force of contraction causes the rings

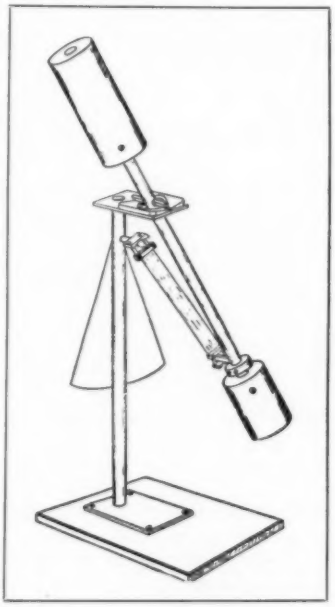


Rotary Rubber Motor

to revolve about the axis. The speed of the motor can be regulated to some extent by advancing or retarding the position of the hot plate in relation to the point of maximum extension.

The reciprocating engine is in the form of a pendulum of slow movement period. Its rubber member is in the form of a strip, one end of which is attached to the bob of the pendulum and its other end fixed to the upright support. This rubber band is stretched, say 300 per cent elongation. Behind the upright is a metal sector so arranged that when the pendulum has reached the extremity of its swing, the rubber strip is clear of the sector or screen. During the rest of its oscillation it is in its shadow.

Behind the pendulum is an ordinary electric heating unit with a copper reflector. The Joule effect is brought into play by starting the pendulum. The radiant heat shrinks the band, pulling back the bob. Then the band cools off in the shadow of the sector, and thus allows the bob to swing out to the other side, whereupon the band, again heated by the radiant energy, contracts and thus repeats the oscillation which continues as long as the heat energy is radiated in this manner. When the electric current is shut off, the pendulum dies down.



Reciprocating Rubber Motor

Sometime in the future Mr. Wiegand hopes to build a five horse-power rubber motor. The extension of the thermal members will correspond to the bore and the cyclic range of elongation will represent the stroke. The speed will be governed by advancing or retarding of the heating element exactly as in the small motors exhibited.

As to the resilient energy of future rubber compounds he predicts that it will reach a value nearly twice the present upper limits, say 2,000 foot-pounds per cubic inch. Even with existing compounds he calculates that 100 pounds of rubber stressed to the elastic limit will drive a man on a bicycle 50 miles, or generate enough electricity to light a 25-watt lamp for 20 hours. This is a performance quite unequalled by any other structural material and approaches the energy storing capacity of a wet battery.

In Mr. Wiegand's opinion it is not unreasonable to expect that rubber will be widely used as a storehouse of energy, replacing steel springs in clocks, gramophones, etc., and possibly even displacing electric storage batteries for submarines and automobiles, with great improvement in safety and certainty.

OFFICERS OF RUBBER SECTION—NATIONAL SAFETY COUNCIL

At the fourteenth annual Safety Congress, held in Cleveland, Ohio, September 28 to October 2, the following officials of the Rubber Section were chosen for the year 1925-1926: Chairman, H. H. Graef, The Goodyear Tire & Rubber Co., Akron, Ohio; vice-chairman, R. C. Salisburg, Fisk Rubber Co., Cudahy, Wisconsin; secretary, W. L. Schneider, The B. F. Goodrich Co., Akron, Ohio; chairman program committee, George S. Sanders, Kelly-Springfield Tire Co., Cumberland, Maryland; chairman bulletin committee, M. A. Quirk, United States Rubber Co., Detroit, Michigan; chairman, engineering committee, E. A. Hoener, Firestone Tire & Rubber Co., Akron, Ohio; chairman, safe practise committee, E. A. McManus, Hewitt Rubber Co., Buffalo, New York; chairman membership committee, Edward R. Lawler, Hartford Rubber Works Co., Hartford, Connecticut; chairman statistics committee, S. Mansfield, Goodyear Tire & Rubber Co., Akron, Ohio; advisory committee, E. W. Beck, United States Rubber Co., New York, N. Y.; H. T. Martin, Fisk Rubber Co., Chicopee Falls, Massachusetts.

THE FIRM ZIEGER & WIEGAND, GUMMIWARENFABRIK, A.-G., LEIPZIG-Vo., has put on the market a rubber joker in the form of a cigar. These are packed in regulation cigar-boxes, are provided with bands and in every respect look like real cigars. When the victim of a practical joker attempts to take one of these he is greeted by a squeak which the highly elastic cigar emits upon the slightest pressure.

What the Rubber Chemists Are Doing

Distribution of Carbon Black in Rubber Stocks[1]

By Ellwood B. Spear and Robert L. Moore[2]

THE optical determination of the distribution of carbon black in tread stocks presents great difficulties because of the completeness with which carbon black absorbs light rays. Reflected light can be used to reveal structure only when the surface of the object exhibits optical inhomogeneity of such dimensions that one particle or aggregate reflects light differently from that of its immediate environment. Such conditions, however, do not exist in the case of tread stocks containing a relatively high percentage of carbon black where the latter is well dispersed. These facts reduce our methods to the employment of transmitted light and, at best, an oil immersion objective. Our difficulties are by no means at an end, however, for the thinnest sections of black stock tread obtainable with even the most efficient microtome are so opaque that little idea of the distribution of the carbon black is possible.

In this article a method is outlined by which sections of tread stock may be obtained so thin that light can be transmitted through and the structure studied optically. Some of the carbon blacks most highly prized in the rubber industry for use in tread stocks have long been recognized to have a so-called reddish brown undertone. Lampblacks, on the other hand, usually have a blue or violet-blue undertone and are frequently employed in rubber and paint vehicles where beautiful blue-gray effects are desired. It is generally admitted that carbon black is a very finely divided substance. The probable average diameter of the particles is in the neighborhood of 0.1 to 0.2 μ. This means that a large portion of the particles cannot be seen by means of the most efficient microscope, because their diameters are below the resolving power of the instrument.

The authors believe the excellent distribution of the carbon black in the stocks from which their microsections were made is due in a large measure to their method of milling. Stocks manipulated as described below have never shown any lumps of undistributed carbon, nor has the latter exhibited any tendency to flocculate. The carbon appears to be as finely divided in the rubber stock as in any other medium with which they have worked. This may also be said of the lampblack used, which was high grade employed in the manufacture of first-class paints and enamels.

Hot Milling

The stocks examined were prepared on a small experimental mill. The rubber was broken down at a temperature of 105 degrees to 108 degrees C. The carbon black and zinc oxide were milled in as quickly as possible at this same temperature. As soon as the carbon black had all disappeared the stock was thoroughly mixed by rapid cutting for 5 minutes. It was then cut off the mill and cooled to a temperature of 70 degrees C. The back roll was chilled until cold, after which the sulphur and accelerator were milled into the stock. The latter was again thoroughly mixed by rapid cutting for 5 minutes. The temperature was kept as nearly as possible at 70 degrees C. The formula and tests are given in tabular form:

	Carbon Black Stock	Lampblack Stock
FORMULA		
Pale crêpe	73.5	73.5
Compressed carbon black or lampblack	19.06	19.06
Zinc Oxide	4.33	4.33
Sulphur	1.84	1.84
Diphenylguanidine	1.27	1.27
CURE AND TESTS		
Best cure	45 × 40	35 × 40
Tensile, pounds per square inch:		
At 300% elongation	845	Not determined
At 500% elongation	2450	2912
At break	5117	4413
Elongation at break, %	706	638

Method of Making Thin Sections

Those who have endeavored to work with carbon black rubber stocks under the microscope, especially where the concentration of the carbon is high—i. e., 20 per cent or more by weight on the batch—realize how extremely difficult it is to obtain sections thin enough so that even the most intense light will pass through. Carbon black absorbs the light so completely that, when the former is well distributed in rubber, a section from the microtome appears jet black when viewed by transmitted light. Such a section is, of course, quite useless for studying the structure of the stock by means of the microscope. Sections of any desired thickness may be made by the process described below.

This method is a modification of that described by Green.[3] Pieces of technically cured stock are given a treatment with a solution of sulphur chloride in carbon tetrachloride. As Green has already pointed out, the treatment with sulphur chloride depends upon the type of the stock in question and also upon its previous history as to cure. The writers have found by experience that a technically cured stock containing 19 per cent of carbon black by weight gives the best results when treated for one and one-half hours at room temperature in a solution which consisted of four drops of sulphur chloride in 10 cc. of carbon tetrachloride.

The treatment with curing acid causes the rubber to swell considerably, but, what is much more important for subsequent steps of the process, the stock is rendered "dead." Most of the original tenacity has disappeared and the stock has little tendency to regain its shape after it has been released from stress. The percentage stretch at rupture is very low and thin sections may be easily made with the microtome because the stock cuts rather than squeezes away from the edge of the knife. Moreover, the operator may decrease the thickness of the microtome sections on a microscopic slide to any desired degree by pressure skilfully applied with a blunt instrument. Herein lies the secret of making thin sections of carbon black stocks. The mass must be brought to such a state by the sulphur chloride treatment that the microtome sections will not recover their former shape after they have been squeezed thin. They must adhere to glass, something that raw or technically cured rubber will not do.

If the stock is allowed to stand for several hours after the sulphur chloride treatment, it will contract and become brittle. Brittle sections cannot be thinned out by pressure, because the latter produces fragments or a powder instad of a broad, flat surface. It is often possible to soften a brittle section by soaking it in carbon tetrachloride. It has also been found expedient to wet the specimen with carbon tetrachloride while the squeezing operation is being carried out. A freshly prepared wet specimen can be smeared over the surface of the microscopic slide like a portion of very resistant putty. It is not at all necessary, however, to employ such extreme measures.

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[1] Presented before the Division of Rubber Chemistry at the 69th Meeting of the American Chemical Society, Baltimore, Maryland, April 6 to 10, 1925. Paper condensed from *Industrial and Engineering Chemistry*, September, 1925.

[2] Thermatomic Carbon Co., Pittsburgh, Pennsylvania.

[3] *Industrial and Engineering Chemistry* 13, 1130 (1920); *The India Rubber World*, September 1, 1922, 811.

After removal from the sulphur chloride-carbon tetrachloride solution the specimens are shaped in wedge form. Convenient dimensions are, height 10 mm., thickness 0.5 mm., width at base 4 mm. The object of the wedge shape is to present a small portion of the specimen to the cutting edge of the sectioning razor and at the same time to insure a rigid mounting in the paraffin block.

The wedge-shaped specimen is next mounted in a paraffin block with the apex of the wedge up. The shape of the paraffin block will be determined, of course, by the style of microtome employed. For purposes such as those under discussion a most excellent microtome can be made by utilizing ordinary microscopic equipment.

Preparation of Slide

The thinnest section that it is possible to make with the microtome is transferred to the center of a microscopic slide. With the aid of a magnifying glass, held in place by a suitable stand, the specimen is next pressed out thin on the glass side by means of a blunt instrument, such as the small blade of a pocket knife, the point of which is not sharp. The pressure is best applied so that the hand travels through a short arc of a circle. The specimen and the point of the knife blade remain in the center of the imaginary circle, whereas the blade and handle of the knife form a radius. Simultaneously with the to-and-from movement the knife is withdrawn slightly in the direction of the hand. The thinning operation must be continued until the specimen has the color of the undertone of the carbon—reddish amber or blue-gray, as the case may be, when the slide is held between the eye and daylight. It is usually necessary to observe the color through a magnifying glass. It is quite useless to mount a specimen that appears jet black under the conditions enumerated above, because the black color is proof that light will not pass from the microscopic reflector through the specimen into the objective.

Skill on the part of the operator is, of course, essential to success, but the most important factor is the condition of the stock during the thinning process by pressure. If the stock is too hard it will break into fragments each of which is impermeable to light. On the other hand, if the treatment with sulphur chloride has not been carried far enough the specimen will be elastic and will not remain spread out in a thin film after the pressure is removed. It is wise to keep the glass and pressure instrument wet with carbon tetrachloride during the operation, as this precaution enables the stock to adhere to the glass slide.

The slide is then mounted with Canada balsam in the usual manner. A very thin cover glass should be employed and should be pressed down between two pieces of glass or microscopic slides while the balsam is quite warm. This is necessary because the specimen is pressed on the surface of the slide and cannot be brought into the focus of a high-power objective if the cover glass and the Canada balsam are too thick.

The Physical Properties of Rubber[1]

By L. B. Sebrell, C. R. Park and S. M. Martin, Jr.

In their microscopic examination of rubber the authors studied shapes, sizes and character of rubber particles in latex and the effects of drying and coagulation by acid. The results obtained by this investigation are summed up by the authors in the following conclusions:

The foregoing facts led to the belief that (1) ordinary rubber is a very closely packed mass of discrete latex globules; (2) the increase in plasticity upon milling is due to their partial destruction; (3) the decreased consistency of cements made from milled stocks is traceable to the same cause; (4) the peculiar stress-strain properties and grain effects are due at least in part to this structure; (5) the structure probably persists during vulcanization; (6) the destruction of the structure is accountable for the low tensile properties of overmilled rubber which has been cured to a proper coefficient of vulcanization.

[1] Presented before the Division of Rubber Chemistry at the 69th Meeting of the American Chemical Society, Baltimore, Maryland, April 6 to 10, 1925.

Handling Solvents in the Rubber Industry[1]

By D. T. Wright

The importance of the rules prescribed by the Underwriters' Laboratories cannot be too strongly emphasized. In spite of all the precautions which have been taken many fires have occurred which were directly attributed to inflammable vapors ignited by static electrical discharges.

As the degree of hazard varies with the choice of solvents, great care should be taken to select those with properties best suited to the needs, and adopting standard precautions in its handling, storage and use.

Carefully drawn specifications should include degrees Beaumé, initial boiling and end points, and in certain special cases the percentage distilled at 2 or more intermediate points.

Naphtha

Naphtha used for quick drying cements will have specifications calling for 100 per cent to distil at about 212 degrees F. and will be considerably more hazardous than products having an initial boiling point near 150 degrees F. and an end point of 400 degrees F. The specifications for these various products should be well known to the personnel and care should always be taken to prevent interchanging by error.

Benzol

Benzol is another inflammable solvent which is used extensively. The pure product has a specific gravity of 0.879 at 68 degrees F., flashing point—16.6 degrees F., boiling point 176.3 degrees F., vapor density 2.71, that of air is unity. Its explosive range in air is 2.7 volumes in air to 6.7 volumes in air. Benzol has a toxic effect which should be guarded against in its use.

Where economically possible the fire hazard of naphtha and benzol can be greatly reduced by mixing 60 per cent carbon tetrachloride by volume with 40 per cent naphtha or benzol. This percentage mixture has less fire hazard than kerosene. By increasing the percentage of carbon tetrachloride to a minimum of 70 per cent by volume, the resulting mixture will not flash even at its boiling point.

Carbon Disulphide

Carbon disulphide is extremely hazardous because of the low temperature at which it will take fire. Its apparent ignition temperature is 212 degrees F. At this point it will ignite in air without flame. Its flashing point is —22 degrees F., boiling point 115 degrees F., vapor density 2.6. It burns explosively in air over a wide range of concentrations. One fire of known cause was started by placing a pan containing carbon disulphide on a steam pipe.

Storing Solvents

The purpose in storing solvents should be to isolate the bulk of the flammable solvents not needed for the day's run. This may be accomplished by storage in underground tanks or by the use of isolated buildings reserved for the purpose. The National Fire Protection Association has formulated comprehensive rules for the construction and location of underground tanks and special buildings for hazardous liquids and indicated proper precautions for their operation.

Using the Solvents

The more hazardous processes should be isolated and safeguarded to the maximum by the utilization of forced ventilation systems with fan installed outside the rooms with sufficient air in-take so that an explosive mixture of vapors and air will not pass through the fan. Special attention must be given to insure effective floor ventilation.

It is difficult to provide adequate fire fighting equipment to ex-

[1] Paper read at the meeting of the National Safety Council, Cleveland, Ohio, October 1, 1925.

tinguish fires of solvents such as benzol. Water must be used wisely or it may spread the fire. Good foam systems are effective. Flash fires may be smothered by steam. Carbon tetrachloride, sand and solid sodium carbonate are valuable in many instances.

Static Electrical Discharges

The hazard of fire by static electrical discharges may be guarded against by grounding and by maintaining a high humidity. All metal parts of the building should be grounded as well as all piping, machinery, belting and other moving objects. Spreader operators should stand on a grounded metal platform and not be allowed to wear rubber soled shoes.

High humidity helps to prevent the accumulation of static charges. The average humidity prevailing in summer is sufficient to produce a marked difference in capacity of bodies to build up charges. Doubtless it will be difficult, under many conditions, to maintain a summer humidity the year round, but it appears the effort would be worth while in decreasing the static hazard.

Chemical Patents

The United States

CEMENT. Composition of resin, coal tar pitch, linseed oil, vulcanized rubber and sufficient gasoline to bring the mixture to a heavy consistency.—William W. Marlette, Glendale, California. United States patent No. 1,564,095.

PUNCTURE CLOSING COMPOSITION. A mixture of ground asbestos, pulverized slippery elm bark and water in such proportions as to permit introduction into a tire.—Thomas E. Law, Mesa, Arizona. United States patent No. 1,561,332.

FUSE. A gunpowder core and a waterproofing cover including a substance tending to vulcanize.—W. O. Snelling, Allentown, Pennsylvania, assignor to Trojan Powder Co., New York, N. Y. United States patent No. 1,561,366.

PLASTIC MOLDING COMPOSITION. Distinct particles containing a phenolic condensation product and filler intimately mixed with vulcanizable rubber composition.—Richard W. Seabury, Boonton, New Jersey, assignor to Union Carbide & Carbon Research Laboratories, Long Island City, N. Y. United States patent No. 1,561,525.

ACCELERATOR. Vulcanizing process comprising combining rubber with a vulcanizing agent, a steam blown reaction product of an aldehyde, an aromatic amine, and vulcanizing the rubber.—Adrien Cambon, Tottenville, N. Y., assignor to The Roessler & Hasslacher Chemical Co., New York. United States patent No. 1,562,146.

TREATING RUBBER. Treating rubber hydrocarbons by incorporating therewith a normal alkaline base salt of a phosphorus acid.—Omar H. Smith, New York, assignor to The Naugatuck Chemical Co., Naugatuck, Connecticut. United States patent No. 1,562,262.

SHOE SOLES. Cut leather soles, extracted to remove all extraneous matter, are soaked in water to expand the fiber, then impregnated with rubber solution in the presence of heat and vacuum. Then vulcanizing the rubberized soles by the action of a 2 per cent solution of sulphur monochloride.—Alfred I. Duprey, Eureka, California. United States patent No. 1,562,624.

INCORPORATION OF RUBBER IN NON-AQUEOUS MATERIALS. The addition of a colloidal aqueous solution of rubber to a non-aqueous liquid, with a boiling point of at least 100 degrees C, at a temperature from 110 to 150 degrees C.—John M. Weiss, New York, N. Y. United States patent No. 1,563,410.

PLASTIC COMPOSITIONS. A minor portion of rubber is dissolved and a major portion of cotton fiber is saturated with the rubber solution. The solvent is removed, the fiber compounded with filling, pigment and vulcanizing material, dried and vulcanized.—Bela W. Rote, Cleveland, Ohio. United States patent No. 1,563,872.

TREATING RUBBER COMPOSITION. The surface of a vulcanizable rubber composition is treated with a small quantity of accelerator effective only upon the surface portion causing a relatively high degree of cure upon the surface.—John B. Dickson, Akron, Ohio, assignor to The B. F. Goodrich Co., New York, N. Y. United States patent No. 1,564,050.

The Dominion of Canada

ACCELERATOR. The reaction product of diphenyl-guanidine and dimethyl-dithio-carbamic acid.—The Dovan Chemical Corporation, New York City, assignee of Morris L. Weiss, Belmar, New Jersey, U. S. A. Canadian patent No. 255,351.

ACCELERATOR. A method of making mercapto-benzo-thiazole-disulphide, and then heating it in the presence of sulphur.—The Goodyear Tire & Rubber Co., assignee of L. B. Sebrell & C. W. Bedford, all of Akron, Ohio, U. S. A. Canadian patent No. 255,762.

The United Kingdom

TREATING LATEX. Normal alkaline-base salts of phosphorus acids are added to latex to act as a preservative, and subsequently as an accelerator of vulcanization or they may be added to plastic rubber as an accelerator.—Naugatuck Chemical Co., Naugatuck, Connecticut, assignees of O. H. Smith, New York, N. Y., both in U. S. A. British patent No. 239,840.*

ADHESIVE RUBBER COMPOSITIONS. Mixtures of an aqueous dispersion of rubber, such as latex, a resinous tacky agent such as polymerization products of the higher fractions of coal tar emulsified in water, thickened and stabilized. Fillers and preservatives are added.—General Rubber Co., assignees of M. C. Teague, both of New York, N. Y., U. S. A. British patent No. 240,241.*

ANTI-OXIDANT. Deterioration retarders or anti-oxidants for vulcanized or unvulcanized rubber, balata or gutta percha are prepared by condensing equimolecular proportions of an aliphatic aldehyde with an aromatic amine such as aniline, ortho, meta, or para-toluidine, monomethyl-aniline, or 4-amino-1 3-xylene, in strong acid solution.—Naugatuck Chemical Co., Naugatuck, Connecticut, assignee of S. M. Cadwell, Leonia, New Jersey, both in U. S. A. British patent No. 240,407.*

POROUS RUBBER. Rubber containing a large number of microscopically small pores is obtained by converting latex, to which vulcanizing ingredients have been added, into a homogeneous cohesive jelly by the addition of salts of magnesium or the alkaline earths, and vulcanizing under conditions which prevent evaporation of the volatile constituents of the mixture.—H. Beckmann, 26 Albertinenstrasse, Zehlendorf, Berlin. British patent No. 240,430.*

RUBBER TUBULAR ARTICLES. Such articles are made from latex or other water dispersion of rubber, balata, gutta percha or the like by streaming it into a coagulant such as acetic acid so as to coagulate the latex from the outside inwardly and then removing the core of uncoagulated latex.—Revere Rubber Co., Providence, Rhode Island, assignees of W. A. Gibbons and H. A. Koenig, both in New York, N. Y., U. S. A. British patent No. 240,796.*

*Not yet accepted.

PARA FLUX

Pará Flux is a saturated hydrocarbon obtained by polymerization under high heat and pressure. Its specific gravity is 105 and its Saybolt viscosity is 77 at 100 degrees C. Actual rubber compounding service has demonstrated this material to be a most efficient softener. In all dark stocks compounded for tackiness in processing, or high tensile properties and abrasive wear in service, such as tire treads, heels, etc., this softener gives very satisfactory results in proportions as high as 8 parts to 100 of rubber by volume.

CHEMICAL EXPORT INCREASES

During the first nine months of 1925, American exports of rubber chemicals showed great increases, shipments of zinc oxide and white lead being more than double those of the corresponding period of 1924. Exports of some of these commodities during January-September, 1925, were as follows: Zinc oxide, 15,507,100 pounds, value $1,075,800; lithopone, 1,908,200 pounds, value $98,990; bone black and lampblack, 2,949,700 pounds, value $187,200; carbon black, 29,461,100 pounds, value $2,398,500; red lead, 1,242,670 pounds, value $141,800; and white lead, 10,959,600 pounds, value $1,025,800.

AIR CONDITIONING

The application of air conditioning to many industrial processes covers a broad field of research. Its advantages and the extent to which it is applied are, in general, scarcely realized. In the rubber industry, for example, it is used in drying crude rubber, fabrics, and in the manufacture of many rubber products, particularly controlling rubber dipping processes. Drying rubber in conditioned air hastens and cheapens the operation and improves the strength and elasticity of the gum. In the process of dipping, conditioned air makes possible the technical control of the solvent evaporation, the safe dilution and removal of the dangerous naphtha vapors and the avoidance of static electrical discharges which sometimes cause fires or explosions.

RUBBER MACHINERY SHIPPED BY AIR MAIL

A rush order for one of its labor-saving machines was recently received by the Utility Manufacturing Co., Cudahy, Wisconsin, an organization specializing in equipment for rubber manufacturers. Packed according to postal requirements, and with air mail postage attached, the machine was soon on its way, arriving at its destination in one of the upper sections in New York City in less than twenty-four hours.

Carl Stuart Williams

Carl Stuart Williams, American rubber chemist and technologist, is a native of Cleveland, Ohio, where he was born in 1886. His education was obtained in the public schools of East Cleveland and at the Case School of Applied Science. His course there was interrupted after two years by an interval of three years when he resumed his studies at Ohio State University, graduating there in chemistry in 1913. Immediately following graduation he entered the research laboratory of one of the leading American rubber manufacturing companies. In the course of this connection he visited many factories inspecting all the processes of factories making tires, rubber footwear, mechanical rubber goods and druggists' sundries.

Carl S. Williams

In the fall of 1915 he joined, as chemist, the operating staff of Perth Amboy Chemical Works, a subsidiary of Roessler & Hasslacher Chemical Co. He was advanced to assistant works manager and later as rubber technologist supervised the installation of a rubber compounding and testing laboratory established to afford the customers of the R. & H. company with reliable information concerning accelerators and other chemicals used in the vulcanization of rubber. Under his direction the work of this laboratory has steadily increased in scope and volume.

In connection with his work as rubber technologist, Mr. Williams developed a testing machine attachment for recording stress-strain curves. He is a member of the American Chemical Society, Chemists Club of New York, New Jersey Chemical Society, Kappa Tau Phi of Case School of Applied Science, since united with Sigma Chi.

RUBBER ASSOCIATION ANNUAL MEETING AND DINNER

The eleventh annual meeting of the Rubber Association of America will be held at 10.30 a.m., January 11, 1926, at the Hotel Commodore, Lexington avenue and 42nd street, New York, N. Y. The regular order of business will be taken up promptly, although it has been decided to cancel at this time the usual annual meetings of the Association's various divisions and committees. A luncheon is to be served at 1.00 p.m.

The twenty-sixth annual dinner will be held January 11, 1926, at 7.00 p.m. in the Grand Ballroom of the Hotel Commodore, the principal speaker of the occasion being Samuel M. Vauclain, president of the Baldwin Locomotive Works, Philadelphia, Pennsylvania. Members who plan being present at this dinner should secure reservations as early as possible, the closing date for such reservations being January 6.

ACCORDING TO THE DEPARTMENT OF COMMERCE, THE UNITED States exported during the first ten months of 1925 1,389,976 pneumatic casings for automobiles, value $17,331,608. This compares favorably with similar shipments for the corresponding period of 1924 of 1,042,038 casings, value $12,664,631. The three leading customers for the 1925 shipments were: the United Kingdom, 153,277 casings, value $1,798,302; Argentina, 147,983, value $1,613,188; and Australia 67,917, value $1,072,036. The purchases by the two last-mentioned countries represent great advances as compared with the year previous.

REPORT OF RIMS INSPECTED AND APPROVED BY THE TIRE AND RIM ASSOCIATION OF AMERICA, Inc.

Size	November, 1925		First 11 Months, 1925	
Clincher Rims	Number	Per Cent	Number	Per Cent
24 x 3	2,291	0.1	14,380	0.1
26 x 3	6,653	0.3	87,367	0.4
28 x 3	1,191	0.1	4,057	0.0
30 x 3	.....	...	212,043	0.9
30 x 3½	496,973	22.4	4,682,841	19.2
31 x 4	23,049	1.1	613,583	2.5
Straightside Rims (Pass.)				
25 x 3½	.....	...	460	0.0
27 x 3½	201	0.0	2,783	0.0
28 x 3½*	990,160	45.1	8,018,392	32.9
29 x 3½*	.....	...	144,390	0.6
30 x 3½	21,352	1.0	587,074	2.4
32 x 3½	1,556	0.1	26,514	0.1
28 x 4*	148,281	6.7	2,810,998	11.5
29 x 4*	129,816	5.9	1,522,898	6.2
30 x 4*	213	0.0	289,753	1.2
31 x 4	.....	...	1,515	0.0
32 x 4	26,516	1.2	288,921	1.2
33 x 4	1,581	0.1	26,198	0.1
34 x 4	.....	...	759	0.0
29 x 4½*	7,898	0.4	487,560	2.0
30 x 4½*	125,328	5.7	1,549,360	6.2
31 x 4½*	.....	...	247,481	1.0
32 x 4½	38,754	1.8	594,421	2.4
33 x 4½	.....	...	1,854	0.0
34 x 4½	1,464	0.1	91,490	0.4
36 x 4½	.....	...	154	0.0
30 x 5*	30,570	1.3	370,781	1.5
31 x 5*	15,371	0.7	441,248	1.8
33 x 6*	22,115	1.0	90,646	0.4
Truck Rims				
30 x 5	66,307	3.0	798,951	3.3
34 x 5	9,635	0.5	102,287	0.4
32 x 6	14,512	0.7	149,387	0.6
36 x 6	10,335	0.5	73,264	0.3
34 x 7	1,315	0.1	22,613	0.1
38 x 7	1,380	0.1	8,591	0.0
36 x 8	808	0.0	10,707	0.0
40 x 8	1,857	0.1	13,050	0.1
40 x 10	196	0.0	802	0.0
44 x 10	147	0.0	718	0.0
Totals	2,197,825	100.1	24,390,290	99.8

	Per Cent		Per Cent
Motorcycle	0.5	Motorcycle	0.5
Clincher	23.5	Clincher	22.6
Balloon	66.8	Balloon	65.3
Regular S. S.	4.4	Regular S. S.	6.8
Truck 20"	3.8	Truck 20"	4.0
Truck 24"	1.2	Truck 24"	0.8

*Balloon casings.

RUBBER MEN BECOME MEMBERS OF COCOA AND RUBBER EXCHANGE

Fifteen men, seven of whom are located abroad, have been elected, under the new conditions, to rubber founder memberships by the board of managers of the New York Cocoa Exchange. Actually engaged in some branch of the rubber trade, either here or abroad, these members who will form the nucleus of the first rubber exchange to be opened in America are the following:

Walter Henry Lake, Graham, Hinckley & Co., Inc., New York; Henry A. Ahrens, Mecke & Co., New York; David H. Zelisse, Curaçao Trading Co., New York; Nicholas Bruning, Mecke & Co., New York; Andrew Miller, R. J. Rouse & Co., London; Adrien Alcan, Alcan & Co., Paris; Emile Alcan, Alcan & Co., Paris; I. Henry Hirsch, Adolph Hirsch & Co., Inc., New York; Hans Michahelles, Gebrueder Michahelles, Hamburg; Louis V. Keeler, Oliver & Keeler, New York; J. William Oliver, Oliver & Keeler, New York; H. J. Wentz, The Otto Gerdau Co., New York; George Robinson, Havre; Eugene Louis Taquey, Havre; J. C. Ragg, J. H. Raynor & Co., Ltd., London.

RUBBER-CHICLE BUDDING PROCESS

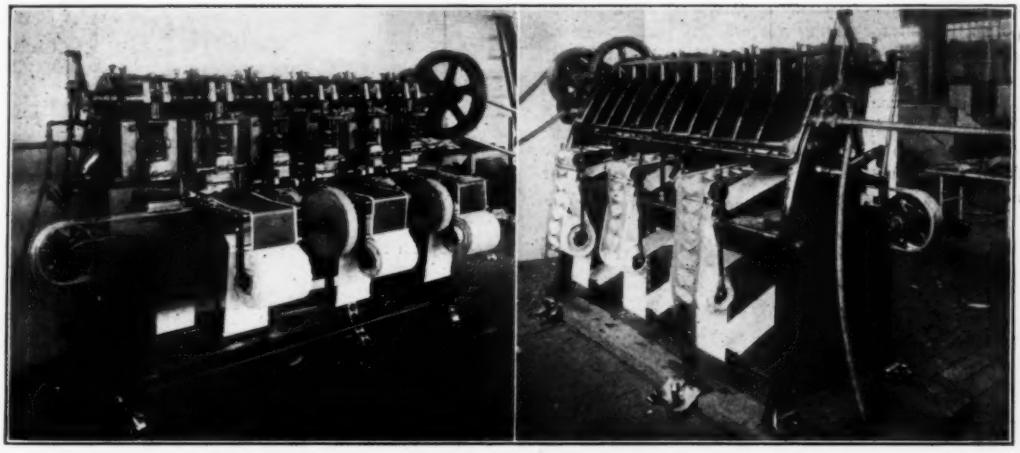
From La Habra, California, comes a novel and unique way of budding avocado trees by opening the bark with a knife, inserting a bud, wrapping it with rubber tape and then sealing it with chewgum. The fruit grower claims that he and others using his method get larger avocados with smaller seeds, and also secure a lead of many months in development over other methods.

New Machines and Appliances

Tire Valve Pad Making Machine

THE rapid manufacture of tire valve patches is effected at minimum cost by the automatic die cutting and laying press represented here in front and rear views.

The press comprises several units or slides, each with its individual stock reel in front for holding the coil of stock; an automatic roll feed, either in front or rear of the press feeding the stock to the die, and a scrap reel in the rear for rewinding the liner and scrap.



FRONT REAR

The V & O Press for Making Tire Valve Patches

The operation of making a plied up valve patch begins at the right of the press. Here the piece which forms the base of the patch is cut out and deposited on an endless belt conveyor traveling from right to left under the punches and dies. At every station other pieces are cut and are deposited in rotation on the next preceding ply as the belt bearing them passes. The patch is thus completed at the last station to the left.

To insure accuracy in placing the various pieces in their relative positions, after being cut they are held on to the die plunger by a vacuum and discharged in position by compressed air when they reach the conveyor.

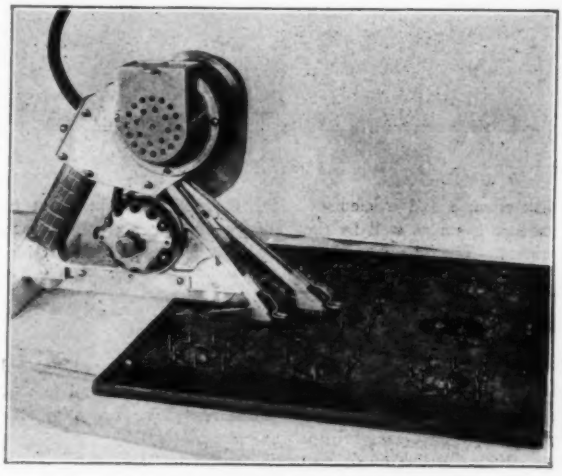
The punches and dies are very accessible, and easily removed, thus their proper care and sharpening can be readily accomplished. Ample adjustment is provided wherever necessary.

The saving effected in labor is the chief advantage of this machine, only two operators being required, one to replace the material rolls and remove the scrap, the other to receive the finished patches as they emerge from the machine on the belt conveyor. A complete valve patch is produced at each stroke of the press at the rate of 30 to 40 a minute.—The V & O Press Co., Union Turnpike, Hudson, N. Y.

Heel Washer Setter

A machine for rapidly placing nailing washers on the pins of rubber heels molds, is here pictured. The device consists of a hopper holding about a pound of loose washers, a motor of one-two hundredth horse power stirs and selects them so that they discharge properly faced into three chutes, which guide them to the shouldered pins depositing one washer on each as the washer setter is drawn by its handle across the mold plate toward the operator. In the base of the tool are small wheels to facilitate its passage across the mold plate.

This patented device is the result of a long period of development. It eliminates the necessity of teaching molders to set washers by hand with much consequent loss of production. It is fully automatic and with a few moments of practice will enable a new workman to set washers at full speed. This machine does not require special washers but can be fitted to handle any type of cupped or flat washers.—Utility Manufacturing Co., Cudahy, Wisconsin.



Dryden-Utility Washer Setter

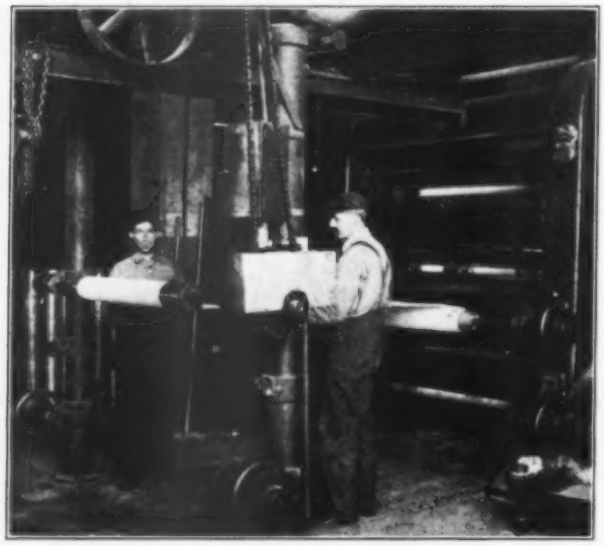
Brass Steam Fittings

The use of cast iron fittings for steam and water connections on mills, washers, calenders and presses shows less initial cost for equipment but lacks in ultimate economy in service. In the matter

of fittings such as swivel elbows, expansion joints, swing joints, etc., intended for use on steam lines at machines where flexible joints are necessary, brass is far preferable to iron in practical utility. Special brass fittings for rubber mill and press room are therefore meeting with popular favor especially when properly proportioned and provided with suitable packing spaces for prevention of leakage.—The Bridgwater Machine Co., Akron, Ohio.

Calender Wind-up and Let-off

An auxiliary wind-up and let-off is here represented applied for handling liners at a rubber calender. The attachment is used for this purpose and also for taking out old and putting in new liners in handling fabric which is being passed through a calender a second time. The device is operated by an endless link belt chain from an overhead counter shaft. All the attachments for regulating the winding-up and letting-off action are at one side of the calender convenient to the operators, thus leaving passage to the other side of the calender clear for feeding the stock to the rolls. The device aids the calender crew by promoting not only



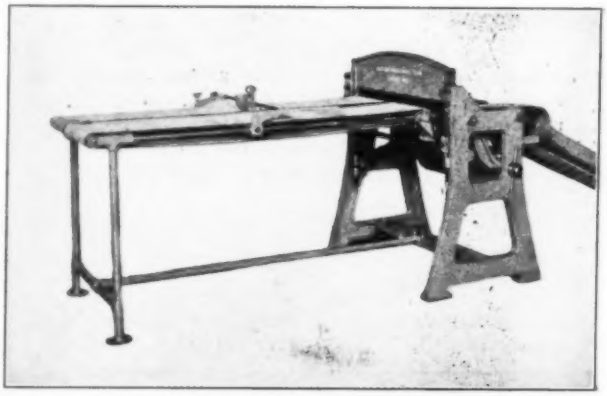
Vaughn Liner Wind-up

the convenience and efficiency of the calender crew but that of the cutting room as well by the delivery of properly rolled stock and liners.—The Vaughn Machinery Co., Cuyahoga Falls, Ohio.

Rubber Strip Cutting Machine

The strip cutter here illustrated is designed to cut calendered rubber into short pieces of definite length. It is a complete unit with self-contained, ½-horse power motor drive operating the apron conveyors and stock cutting shears.

The strip stock comes to the machine rolled in liners, from which it is stripped by recessed stripping rollers. The rubber strip is then conveyed by an apron to the shearing blades. During the shearing operation the feed rollers separate to prevent the rubber from curling between the rollers and the blades. The rollers are speeded sufficiently to prevent the stock from sagging in the gap between the apron and the cutting table. The stock in passing forward upon the discharge apron moves an electric switch, located at a definite distance from the shearing blades, approximately equal to the length of piece to be cut. The positive clutch is thus placed in circuit, actuating the drive of the high speed shearing blades. The severed piece is rapidly conveyed away by the discharge conveying apron.

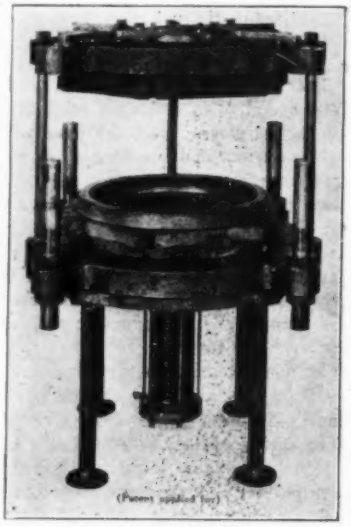


Rubber Strip Shear

Five apron speed changes are provided to cover the customary working conditions. The machine is designed for high speed service and at all critical points in its construction the operating parts are of special quality materials.—Nelson Bros. & Strom, Racine, Wisconsin.

Inner Tube Vulcanizing Press

The success of steam jacketed molds for curing inner tubes is dependent on their use in an accurately registering, quick operating, instant locking press, such as here pictured.



Instant Locking Tube Press Vulcanizer

This press has a fixed steel head, a moving steel lower platen actuated by an air cylinder, a bed plate with legs, and a quick locking mechanism. The latter device consists of a central steel disk rotatable through a quarter turn by an operating handle. Four steel cranks are pivoted to this disk and to sliding bars with tapered ends thus completing a powerful toggle mechanism. Attached to the platen are four steel posts threaded at one end, and at the other pierced with oblong holes. The tops of these holes are tapered in conformity with the taper of the sliding bars of the toggles. When the lower platen is raised to the closed position the posts pass through holes in the upper platen. A pull of the operating lever forces the heavy toggle wedges into the tapered holes in the posts securely locking the mold shut between the platens. Reversing the lever movement unlocks the press.

A number of these presses can be operated by one man, whose safety and convenience has been considered by making the lower platen the moving member. This feature, and a safety latch, obviate all danger to the workman.—The Akron Equipment Co., Akron, Ohio.

Roller Band for Building Tire Bands

The flat-band method of building tires upon a drum has led to a number of appliances for eliminating hand work. The important and difficult operation of centering and rolling the plies of a tire band is not only severe on the operators when done by hand work, but causes unequalized strains in the edges of the uncured bands.

Williams' Roller Bar

These difficulties may be entirely eliminated by the use of the roller bar here illustrated. It is provided with a simple friction device locking over a wedge shaped lug on the end of the bar opposite its hinged end. This arrangement aids the operator to place the bar under the band quickly. Smooth running bronze bearings on the roller bars speed up the operation of rolling the band and centering it on the pulley or core. Burning and chafing the operator's hands is not possible and the danger of ply separation at the edges of the band is avoided. The practical utility of the roller bar is particularly evident in quantity production.—The Williams Foundry & Machine Co., Akron, Ohio.

Improved Fabric Cutting Presses

In the various divisions of rubber manufacture particularly in footwear, the clicking machine ranks foremost for die cutting fabrics. The latest improved models of these machines, here shown, are today available for cutting all materials used in making vulcanized footwear, and for other rubber products such as rubber soles, heels, tire patches, mechanicals and various sundries.

In manufacturing trimmed canvas vulcanized footwear the Model C, factory or motor drive, is used for cutting small parts such as trimmings, ankle patches, stays, insoles, rag fillers, and the like.

Model D, also individually motor driven, carries a block 45½ by 24 by 8 inches, and is most successful on work which may be classified between that of Model C and Model E.

Model E is for cutting all fabrics such as canvas linings, osnaburg, cashmerette, jersey and sateen. It is individually motor driven and may be operated with a high degree of speed and safety with a low scrap percentage. The machine carries a block 55 by 24 by 8 inches or 55 by 24 by 8½ inches and will handle almost all widths of material cut in the fabric trade.

These machines offer also large possibilities for the economical cutting of rubber in the form of sheet and slab stock either for assembly or as blanks for direct molding.—United Shoe Machinery Corporation, Albany Building, Boston, Massachusetts.

Process Patents

The United States

1,560,617 Attaching elastic heels to boots and shoes. Samuel Stanick, Marlboro, Massachusetts, assignor to United Shoe Machinery Corporation, Paterson, New Jersey.

1,560,700 Tire and tire fabric. Henry Langer, assignor to The I. E. Palmer Co., both of Middletown, Connecticut.

1,560,862 Variegated rubber. Fred Thomas Roberts, Cleveland, Ohio.

1,561,763 Composite laminated structure. Harry N. Atwood, Monson, assignor to Rubwood, Inc., Lawrence, both in Massachusetts.

1,561,765 Manufacturing cushioned wheels. Harry N. Atwood, Monson, assignor to Rubwood, Inc., Lawrence, both in Massachusetts.

1,561,889 Forming athletic supporters. Joseph L. Stengel, assignor to Martin-Page Co., both of Middlesboro, Kentucky.

1,561,942 Splicing uncured rubber compounds. Erwin E. A. G. Meyer, assignor to Morgan & Wright, both of Detroit, Michigan.

1,562,548 Making belts. Abraham L. Freedlander and William G. Goodwin, assignors to The Rubber Development Co., all of Dayton, Ohio.

1,562,598 Molding tape. Clarence E. Snyder, Akron, Ohio, assignor to The B. F. Goodrich Co., New York, N. Y.

1,562,677 Bead for pneumatic tires. Frank H. Beyea, assignor to John R. Gammeter, both of Akron, Ohio.

1,562,678 Tire bead construction. Frank H. Beyea, assignor to John R. Gammeter, both of Akron, Ohio.

1,562,882 Marking tires. Frederick H. Hagner, San Antonio, Texas.

1,563,672 Duo-cord tire construction. Thomas Benton Stover, Winona, Minnesota, assignor to Stover Rubber Co., Chicago., Illinois.

The Dominion of Canada

255,225 Manufacturing rubber articles having felt base. Robert B. Russell, Manchester, and Herbert Broomfield, Stockport, both in England.

The United Kingdom

239,596 Charging dental flasks with rubber. S. A. Gutteridge and Amalgamated Dental Co., Ltd. (formerly Ash Sons & Co., Ltd.), 3, Angler's Lane, Kentish Town, London.

240,059 Connecting uppers to insoles and soles. Lotus, Ltd., 193, Sandon Road, and R. Brough, 90 Sandon Road, Stafford.

240,136 Making balata belting. P. F. J. Dezaux, Guise, Aisne, France.*

240,137 Connecting uppers to insoles and soles. J. Blumenfeld, 14, Bockelinstrasse, Dusseldorf, Germany.*

240,570 Construction of protectors for soles and heels. E. L. Lee, Bank House, High street, Stalham, Norwich.

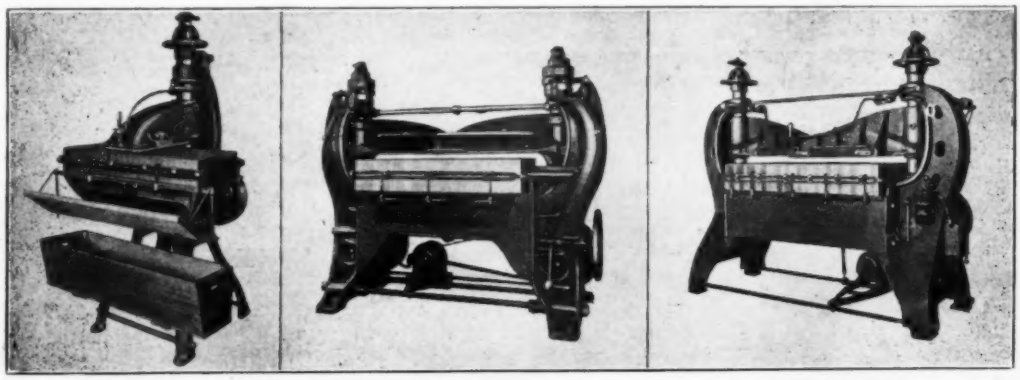
240,822 Making rubber brushes. R. M. Withycombe, Wyoming, Macquarie street, Sydney, Australia.*

*Not yet accepted.

Germany

421,307 (October 27, 1923). Method and apparatus for making crude rubber sheets. Hermann Deborn, Zielstattstrasse 55a, Munich.

422,333 (July 13, 1923). Method and mouthpiece for making thin rubber thread. Max Draemann, von Sandtplatz 1, Köln-Deutz and Max Bühling, Riehler Strasse 88, Köln.



MODEL C TWIN MODEL D TWIN MODEL E

Ideal Clicking Machines

Machinery Patents

The United States

1,561,861. ABRADING MACHINE. This provides for abrading an article throughout a considerable surface area to a uniform depth, or to a desired surface contour, as in buffing off the over-cured surface of a tire air bag. The air bag is held vertically on a revolving support. A motor driven buffing wheel slidably mounted on a carriage, which in turn can be made to move on a circular track, is the combination by which the buffer is adjustable to grind or abrade the entire contour of the air bag.—W. D. Kmentt, Akron, Ohio, assignor to The B. F. Goodrich Co., New York, N. Y.

1,562,331. STRIPPING DEVICE FOR MOLDED RUBBER ARTICLES. The power required to stretch the opening of a small necked water bottle sufficiently to permit its removal from the core, frequently exceeds the strength of the operator. In such cases this device is effective. The cured article upon its core is suspended on an upright mounted on a table, hooks attached to chains are inserted in the opening of the bottle and by hand levers the rubber is stretched to allow the article to be withdrawn from the core by reversing it.—Frank F. Jamieson, Montreal, Canada, assignor to The Goodyear's India Rubber Glove Manufacturing Co., Naugatuck, Connecticut.

1,562,753. TIRE CASING MACHINE. A strip of canvas or cord fabric is wound on a drum and formed into an endless band or ring for subsequent treatment in a forming press or other machine. The endless band while in position on the making machine is marked automatically with index lines to serve as guides to enable the ring or band to be correctly located after removal to the core or former of another machine.—Claude Marie Gautier, London, England.

1,562,754. MACHINE FOR MAKING PNEUMATIC TIRE CASINGS. This has a non-rotatable core wherein annular air bags arranged around the core are adapted when inflated to lay the fabric evenly from the tread portion to the bead portion of the tire. This is accomplished by several rings moving and conforming to the contour of the fabric on the core. The rings contact with the fabric successively from tread to bead until all of them are in contact with the material upon the core.—Claude Marie Gautier, London, England.

1,562,912. GOLF BALL MAKING MACHINE. The outer cover of a golf ball is produced from a solution of gutta percha or balata with or without the addition of rubber. The solvent in the solution is prevented from acting on the rubber windings of the core by the use of hemispherical protecting cups of gutta percha formed in a mold in direct communication with a stock of the solution.—A. E. Penfold, Birmingham, England, assignor to The Dunlop Rubber Co., Limited, Regents Park, London, England.

1,563,037. VULCANIZATION APPARATUS. A systematic arrangement of apparatus is made providing for forming the stock, as of heels, cutting and assembling it in molds locking them and conveying them to the vulcanizer. Thence removing and emptying the molds and finishing the heels. The system virtually provides continuous production for such molded articles. —George J. Mead, Milwaukee, Wisconsin, assignor by mesne assignments to The Fisk Rubber Co., Chicopee Falls, Massachusetts.

1,563,096. APPARATUS FOR PRESSING FOOTWEAR. This machine is effective for pressing foxing used in building rubber shoes, arctics, etc. A lower cylinder is provided at its bottom end with a fluid connection which together with another to an upper cylinder is controlled by a four-way valve in a pressure fluid supply line. The piston connecting the cylinders is thus made to reciprocate and actuate the mechanism. The shoe to be pressed is placed above the upper cylinder, between surrounding inflatable bags which distend inwardly upon the shoe and by their pressure force the foxing firmly to the upper edge of the sole.—Frank J. McDonald, Akron, Ohio, assignor to The B. F. Goodrich Co., New York, N. Y.

1,563,513. APPARATUS FOR REMOVING VULCANIZING BAGS. This device consists of a frame carrying rests for supporting the nested tire casing and air bag, while the casing is stretched open on its lower side by movement of the movable part of pair of hooks which is actuated by connection with a piston rod of a fluid pressure cylinder.—George K. McNeill, assignor to Morgan & Wright, both of Detroit, Michigan.

1,563,519. MACHINE FOR MAKING TIRE CASINGS. This is a hydraulic press for shaping a flat built tire band into form and mounting it upon a bull ring while in the apparatus so that it may be removed upon the ring ready for vulcanization in a tire mold. The tire band is mounted upon the bull-ring by closing of the press following which it is inflated to shape by the application of fluid pressure admitted through a nozzle connected to an opening in the bull-ring.—Albert Otto, assignor to Morgan & Wright, both of Detroit, Michigan.

1,564,171. MILL ROLL COOLING DEVICE. This invention provides a cooling device in which the heated layer of water, admitted to a hollow mill roll for cooling purposes, is removed from the inner surface of the roll and fresh cool water substituted in its place. This is accomplished by installing in the interior of the roll a two-bore central pipe serving as inlet and outlet for the water circulation. Within the roll the inlet water is directed in opposite directions through nozzles, against the walls of the cavity cooling the roll and preventing accumulation of any deposit in the cavity.—Roy W. Brown, assignor to The Firestone Tire & Rubber Co., both of Akron, Ohio.

1,560,656 Diaphragm valve. Roy W. Brown, assignor to The Firestone Tire & Rubber Co., both of Akron, Ohio.

1,561,079 Tire spreader. George Wallis Humfrey, Flint, Michigan.

1,561,214 Engraving machine. Albert A. Bush, assignor to The Firestone Tire & Rubber Co., both of Akron, Ohio.

1,561,903 Machine for treating rubber. David R. Bowen, Ansonia, and Carl F. Schnuck, New Haven, assignors to Farrel Foundry & Machine Co., Ansonia, all in Connecticut.

1,562,362 Stitcher-feeding mechanism for tire making machines. Edward D. Putt, assignor to The Firestone Tire & Rubber Co., both of Akron, Ohio.

1,562,662 Core. William C. Stevens, assignor to The Firestone Tire & Rubber Co., both of Akron, Ohio.

1,562,685 Mold for pedal cushions. Joseph F. O. Burman, Brockton, Massachusetts.

1,563,036 Tension grip. Frederic L. MacAleese, Milwaukee, Wisconsin, assignor to The Fisk Rubber Co., Chicopee Falls, Massachusetts.

1,563,057 Handling truck. Job J. Williams, Milwaukee, Wisconsin, assignor to The Fisk Rubber Co., Chicopee Falls, Massachusetts.

1,563,103 Means for and method of assembling composite heel blanks. Dennis Parks, St. Louis, Missouri.

1,563,465 Attachment for mold engraving machines. Arthur L. Breitenstein, Akron, Ohio.

1,563,505 Grappling device for tire molds. Hector V. Lough, assignor to The Hartford Rubber Works Co., both of Hartford, Conn.

The Dominion of Canada

255,216 Apparatus for rerubbering pneumatic tires. Arnaud Eymael and Michel Dall 'Este, both of Brussels, Belgium.

255,382 Heel trimming machine. The United Shoe Machinery Co. of Canada, Limited, Montreal, Quebec, assignee of James Augustin Brogan, Lawrence, Massachusetts, U. S. A.

255,387 Tire changer. The Weaver Manufacturing Co., assignee of Ira A. Weaver and John Sternaman, both of Springfield, Illinois, U. S. A.

255,712 Tread band building machine. Kenworthy James Thompson, Mansfield, Ohio, U. S. A.

255,729 Tire building core. The Bawden Machine Co., Ltd., Toronto, Ontario, assignee of Barthold De Mattia, Clifton, New Jersey, U. S. A.

255,809 Sole pressing machine. The United Shoe Machinery Co. of Canada, Limited, Montreal, Quebec, assignee of Erastus Edwin Winkley, Lynn, Massachusetts, U. S. A.

255,974 Core. The Firestone Tire & Rubber Co. of Canada, Ltd., Hamilton, Ontario, assignee of William C. Stevens, Akron, Ohio, U. S. A.

The United Kingdom

239,606 Testing apparatus. H. T. Scott-Huntington, 30, Devonshire Road, Harrow, Middlesex.

240,007 Tire building machine. E. Hibbert, 33, Verner street, Goulburn, New South Wales.

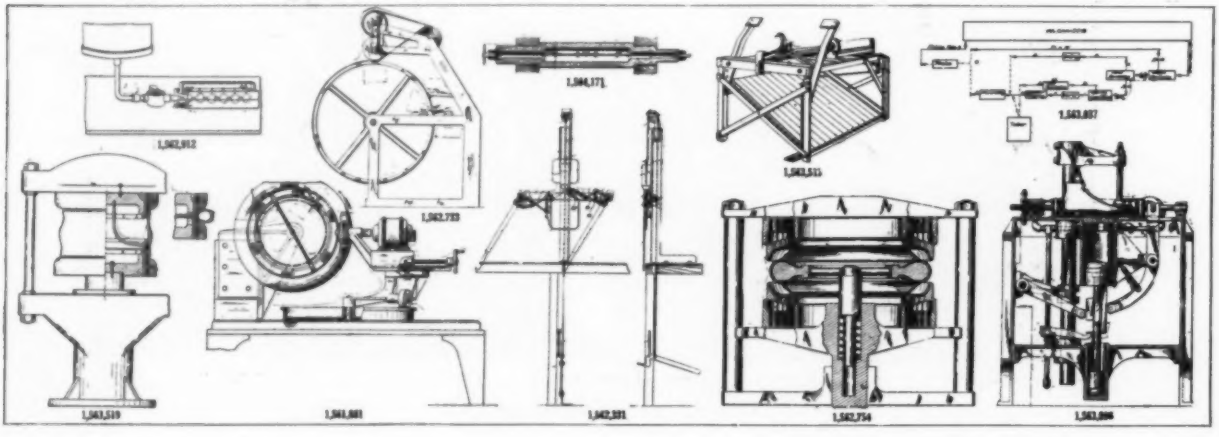
240,124 Ball mill. The B. F. Goodrich Co., 1780 Broadway, New York, N. Y., assignee of J. R. Gammeter, North Portage Path, Akron, Ohio, both in U. S. A.

Germany

927,826 (October 13, 1925). Vulcanizing apparatus. Johann Friedrich Biller, Grindelberg 73, Hamburg.

927,940 (January 29, 1925). Apparatus for rolling fabric in spreading machine without pressure. Continental-Caoutchouc-und Gutta-Percha-Compagnie, Hannover.

928,235 (October 20, 1924). Vulcanizing apparatus for rubber tires. Wilhelm v. d. Heyde, Stade.



The Editor's Book Table

Book Reviews

"STATISTICAL ABSTRACT OF THE UNITED STATES, 1924." Prepared by the Bureau of Foreign and Domestic Commerce, Julius Klein, director. Published by the Government Printing Office, Washington, D. C. Cloth, 824 pages, with index, 6 by 9 inches.

THE present volume, the forty-seventh annual issue, has been arranged by the Division of Statistical Research, and represents a digest of data collected by all statistical agencies of the government, as well as through private sources. Much valuable information has been classified and presented under the thirty-one main headings.

"REPORT OF THE CHIEF OF THE BUREAU OF PLANT INDUSTRY." Prepared by William A. Taylor, Chief of Bureau. Published by Department of Agriculture, Washington, D. C. Paper, 36 pages, 6 by 9 inches.

This publication mentions experiments with rubber trees now growing at the United States Plant Introduction Garden, Chapman Field, near Miami, Florida, which include some twenty different types. In California, two types of dry-country rubber plants are being tested, the Mexican guayule plant, *Parthenium argentatum*, and the native species of milk-weed, *Asclepias subulata*. Experiments in Hevea cultivation in Haiti and the Canal Zone are duly recorded.

"THE BUREAU OF STANDARDS, ITS HISTORY, ACTIVITIES AND ORGANIZATION." By Gustavus A. Weber. Service Monograph of the United States Government No. 35. Published by The Johns Hopkins Press, Baltimore, Maryland. Cloth, 299 pages with index, 6 by 9 inches.

This volume describes the work of the Bureau of Standards in more or less detail, the first part being devoted to a history of the Bureau, while the second deals with its various activities. Mention is made of the divisions and subdivisions which constitute the organization, and considerable space is given to a review of the work being accomplished by the Bureau in connection with the rubber industry.

"WORLD DEVELOPMENTS IN THE COTTON INDUSTRY, WITH SPECIAL REFERENCE TO THE COTTON PIECE GOODS INDUSTRY IN THE UNITED STATES." By Louis Bader. Published by The New York University Press, Washington Square, New York, N. Y. Cloth, 187 pages with index, 6 by 8½ inches.

This volume is a brief and general survey of the significant tendencies in the cotton goods industry since 1909. The volume, divided into two parts, has the following main headings: "Recent World-Growth and Changes in the Cotton-Manufacturing Industry;" and "Tendencies in the Marketing of Cotton Piece Goods in the United States."

New Trade Publications

"THE ENGINEERING ACHIEVEMENTS OF THE WESTINGHOUSE Electric and Manufacturing Company for the Year 1925" is a well-illustrated booklet of 41 pages prepared by H. W. Cope, assistant director of engineering, Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pennsylvania. The main headings of this publication are: "Generation and Distribution of Power;" "Steam Turbines, Condensers and Stokers;" "Transportation;" "The Industries;" "Radio;" "Illumination;" and "Miscellaneous Achievements."

"SURGICAL RUBBER GOODS" IS THE TITLE OF A COMPREHENSIVE and well-illustrated catalog now being published by The Leyland & Birmingham Rubber Co., Ltd., Leyland, Lancashire, England.

UNDER THE TITLE "SUPERIOR SPEED REDUCERS FOR EVERY Service" the De Laval Steam Turbine Co., Trenton, New Jersey, publishes data of interest to industrial concerns.

THE PROPAGANDA DEPARTMENT OF THE RUBBER GROWERS' Association, Inc., is publishing a pamphlet entitled "Rubber and Engineering." The authors, H. P. Stevens and B. D. Porritt, have prepared this bulletin with particular reference to its uses in the engineering industry. A glossary and bibliography are appended.

"RUBBER FLOORS FOR BRIGHTER HOMES AND OFFICES" IS THE title of a little circular published in color and issued by The Leyland & Birmingham Rubber Co., Ltd., Leyland, Lancashire, England, manufacturer of rubber and asbestos goods.

TYCOS CATALOG OF PYROMETERS, ISSUED BY THE TAYLOR Instrument Companies, Rochester, New York, illustrates and describes thermo-electric pyrometers for measuring high temperatures in manufacturing processes. Of special interest to rubber manufacturers are two surface contact thermocouples, one for flat surfaces, such as press plates, and the other for mill and calender rolls.

A CONVENIENT CHART FOR THE USE OF ENGINEERS TO CALCULATE quantities connected with the expansion of steam is being distributed gratis by the De Laval Steam Turbine Co., Trenton, New Jersey. The well known Mollier diagram is printed upon Bristol board, attached to which is a scale which can be removed and used for measuring heat available, spouting velocity, pounds of steam per horsepower. If the steam consumption of an actual engine or turbine is known, the efficiency ratio is found by a simple division. The quality of the steam at the end of a perfect expansion or at the end of actual expansion of known efficiency or steam consumption is also read off immediately from the chart.

"THE BLACK ART OF RUBBER COMPOUNDING," CHATS NO. 9 AND No. 10 issued by Binney & Smith, New York City. Chat No. 9 is devoted to micronex in wire insulation and in tire treads illustrated by typical formulas and stress strain graphs. The effects of other reinforcing pigments, fluxing materials and accelerators are briefly referred to. Chat No. 10 covers the use of reclaimed rubber in tire treads which is shown to be feasible when suitably reinforced by additions of micronex.

THE FOLLOWING PUBLICATIONS HAVE BEEN RECENTLY RECEIVED: "The Mohawk Messenger" and broadside from the Mohawk Rubber Co., Akron, Ohio; "The Wingfoot Clan," from the Goodyear Tire & Rubber Co., Akron, Ohio; and broadside from the Highway Education Board, Willard Building, Washington, D. C.

A TEN PAGE SUPPLEMENT HAS BEEN ISSUED BY THE ROESSLER & Hasslacher Chemical Co., 709-17 Sixth avenue, New York, N. Y., as an addition to their notebook data on rapid accelerators. The matter relates to the special requirements of high and low zinc stocks, and stocks containing reclaimed rubbers and is illustrated by graphs showing the curing effect in each instance.

THE ANNUAL REPORT OF THE DIRECTOR OF FORESTRY OF THE Philippine Islands for the fiscal year ended December 31, 1924, contains one section devoted to the crude rubber investigation carried forward by the United States Rubber Commission. According to this report, the rubber shipped during the year 1924 from the Philippine Islands to the United States totaled 30,205 kilos, value 28,755 pesos; while that exported to the British East Indies amounted to 67,700 kilos, value 81,500 pesos. Gutta percha reexported to the British East Indies totaled 12,812 kilos, value 12,400 pesos. The Philippine peso equals 50 cents U. S. currency.

A COMPLETE LIST OF BAKER & ADAMSON REAGENTS, MANY OF them used in the rubber industry, appears in a new catalog now being issued by the General Chemical Co., 40 Rector street, New York, N. Y.

Abstracts of Recent Articles

THE SPRAYING OF RUBBER LATEX WITH PROTECTIVE COLLOIDS, PARTICULARLY GLUE.—W. Cecil Davey, *Journal of the Society of Chemical Industry*, November 13, 1925. 515 T-517 T. *Rubber Age*, London, December, 1925, 482-484.

ORGANOPHILE COLLOIDS.—G. Stafford Whitby, *Canadian Chemistry and Metallurgy*, December, 1925, 265-267.

RUBBER—AN INTERNATIONAL HOLD-UP. Popular journalistic article on the Stevenson Plan.—William S. Forman, *Liberty*, December 12, 1925.

RUBBER LININGS FOR WET GRINDING BALL MILLS. Grinding Mill theory, tests, wave type of rubber lining for tube mill, power saving and increase of wear.—B. W. Rogers, *The Mining Congress Journal*, December, 1925, 624-626.

THE CONSTITUTION OF RUBBER AND A NEW RUBBER.—*Revue Général Caoutchouc*, 2, No. 13, 5-8, 1925.

WHAT ARE THE REASONS FOR THE CHARACTERISTIC ELASTICITY OF RUBBER? II. The Joule Effect and the New Structure of Substances Arranged in Three Dimensions by Stretching. Previous to the transformation of amorphous to crystalline rubber on stretching the heat effect is negative, and it changes to positive only when the X-ray diagram indicates the formation of a crystalline substance.—J. R. Katz, *Kolloid Zeitschrift*, 37, 19-23, 1925.

THE EXAMINATION OF RAW MATERIALS IN THE RUBBER INDUSTRY I.—Paul Mérisier, *Revue Général Caoutchouc*, No. 13-11-14, 1925.

TESTING OF RUBBER ADHESIVE PLASTER AND INSULATING TAPES.—Rudolph Ditmar, *Chemiker Zeitung*, 49, 636-637, 1925.

VULCANIZATION I AND II. Typical formulas and cures, tables of specific heats of compounding ingredients and tables of log for different thicknesses of rubber in cures are given.—G. Bernstein, *Revue Général Caoutchouc*, 1925, No. 12, 7-9; No. 13, 8-11.

COLLOIDAL LITHARGE IN THE RUBBER INDUSTRY. Colloidal litharge can be dispersed more uniformly in rubber than ordinary litharge, and as an accelerator it greatly increases the rate of vulcanization giving a vulcanized product of superior texture, toughness and durability. Comparative tests of mixtures are given in illustration.—Rudolph Ditmar, *Revue Général Caoutchouc*, 1925, No. 14, 3-5.

SOME PROBLEMS OF THE PAINT AND RUBBER INDUSTRIES. A review of the preparation and composition of raw rubber, its chemical and physical properties, vulcanization accelerators, effect of aging vulcanized rubber, etc., and of the analogy between the vulcanization of rubber and the drying of oils. Discussion and references.—B. D. Porritt, *Journal of the Oil and Color Chemical Association*, 8, 139-158, 1925.

SPOTTING OF CRÊPE RUBBER.—W. Brown, *Bulletin of the Rubber Growers' Association*, 1925, 7, 522-532.

MATURED SLAB RUBBER, ITALIAN.—G. Bruni and T. G. Levi, *Giornale di Chemica Industriale ed Applicata*, 1925, 7, 447-451.

MODERN COMPOUNDING INGREDIENTS, Part II. Hard hydrocarbon, thermatomic carbon and Dixie clay.—John M. Ball, *Rubber Age*, New York, November 25, 1925, 125-127.

VULCANIZATION AND ACCELERATORS, Part II. Serial.—André Dubosc, *Rubber Age*, New York, November 25, 1925, 129-130; December 10, 1925, 165-166.

COAGULATION WITH SODIUM SILICO-FLUORIDE IN CONJUNCTION WITH PARANITROPHENOL.—H. P. Stevens, *Bulletin of the Rubber Growers' Association*, November, 1925, 657-658.

MODERN ASPECTS OF DISEASE CONTROL ON RUBBER ESTATES.—Charles H. Wright, *The India Rubber Journal*, November 7, 1925, 865-867.

TENDENCIES IN RUBBER COMPOUNDING.—W. B. Wiegand, *The India Rubber Journal*, 1925, November 14, 900-902; November 21, 933-938. Illustrated. The Use of Reclaimed Rubber *The India-Rubber Journal*, December 5, 1925.

MEASURING EFFECTS OF CORONA ON RUBBER. Deleterious effects produced by ozone when rubber is subjected to corona and tension simultaneously. Significance in testing electrical rubber goods.—F. H. Haushalter, *The India Rubber Journal*, November 14, 1925, 897-898.

LEAF DISEASES OF HEVEA.—Charles Herbert Wright, *The India-Rubber Journal*, December 5, 1925, 1027-1029.

MOISTURE AND BLOOM GOODS.—E. Bruce Warren, *The Rubber Age*, London, December, 1925, 479-481.

Interesting Letters From Our Readers

Not American Achievements

TO THE EDITOR:

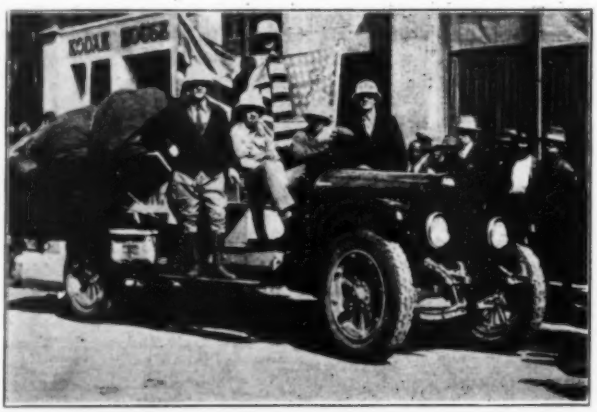
Dear Sir: I was very interested in the article published in your November issue, relating to the gas containers of the airship Shenandoah. The description of the manufacture is an excellent one, but I was surprised to note that the production of skin-lined gas bags has been regarded by the Navy as a notable American achievement and that they had produced a rubberized fabric and a rubber cement more efficient than glue for attaching gold beaters' skin to the cloth.

The method of manufacture exactly describes the process which was developed in Great Britain by myself in the Airship Department of Messrs. Vickers Ltd., and previously in the Royal Aircraft Factory. Although the original process of combining rubberized fabric with goldbeaters' skin is not the subject of a patent, yet the last improvement is patented in America under Patent No. 179,041 of July, 1917, in the names of Vickers Ltd., and Sir James McKechnie, at that time managing director of Vickers Ltd., Barrow Works, of which the Airship Department formed a section.

Relating to Duralumin, although I am not personally involved, here again Vickers Ltd., are responsible for the development of that special aluminium alloy, having taken over the original German patent and developed it in Great Britain.

Glasgow, Scotland

ALFRED RYAN,
Managing Director,
The Ioco Rubber & Waterproofing Co., Ltd.
(Associated with Vickers Limited)



THIS IS THE DENVER-AFRICAN EXPLORATION PARTY RIDING ON GENERAL TIRES IN THEIR QUEST FOR THE MISSING LINK IN THE JUNGLES OF SOUTH AFRICA. WHEN THIS PICTURE WAS TAKEN THE PARTY WAS ABOUT TO LEAVE CAPETOWN ON THEIR WAY INTO THE WILDS OF THE KALAHARI DESERT WHERE STILL AND MOTION PICTURES WERE TO BE MADE OF THE RARE RACE OF BUSHMEN. THE EXPEDITION SET OUT IN THE INTERESTS OF SCIENCE AND IF POSSIBLE THE SETTLEMENT OF THE EVOLUTION ARGUMENT BY LOCATING THE SO-CALLED MISSING LINK.

New Goods and Specialties

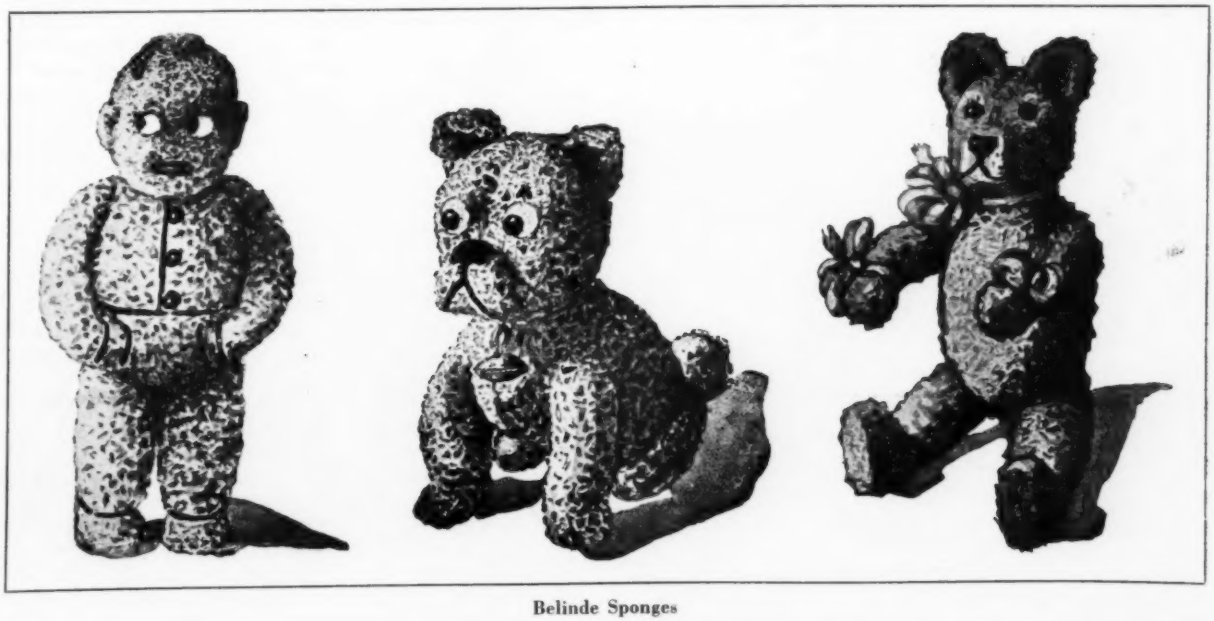
Spray for Bobbed Hair

A COMBINATION scalp massage and shower spray particularly adapted for the use of women wearing their hair bobbed. This spray consists of an ordinary shower spray of small diameter with an attachment screwed on. The attachment is composed of a circular scalp comb made of hard rubber which enables the user to massage the scalp while obtaining a flow of water through the sprinkler top. The spray is five feet long, made of high grade red rubber tubing with metal faucet connection which will fit any ordinary faucet. — The Vant Woud Rubber Co., 2-4-6 Johnson street, Newark, New Jersey.

Combined Scalp Massage and Shower Spray

Amusing Sponge Rubber Bathtub Dolls

Bathtub dolls of sponge rubber shown in the accompanying illustration do not merely keep the baby amused in the bath, but take the place of washcloth and sponge. The dolls are made up entirely of sponge rubber, of extremely soft and pliable texture, in gay, bright colors, and are not affected by soap or hard usage. There is nothing harmful used in their make-up, only non-poisonous crude materials and pigments being employed, and the same rubber as is used in all types of Belinde sponges. They make most attractive dry sanitary toys as well.—Belinde-Werke, A.-G., Hebersee Gummiwerke A.-G., Hamburg, Wandsbek, Germany.



Belinde Sponges

Rubber Slickers

Now come the slicker sets with hats and arctics to match, in high shades of green, red and blue. They are brightly finished in a specially treated rubber and are odorless, non-cracking and waterproof. Sets for boys come in tan as well, the sizes ranging from four to eighteen, the girls' sizes, from four to sixteen.

Punching Bag

A healthy exercise for both boys and girls is punching the bag, and the sturdy, junior Biff-Bag is complete in itself—needs no platform or other apparatus or fixing—no screws, carpenter or mechanic needed to have it ready in a few seconds. Every house has one or more places where the Biff-Bag can be hung—say, in a doorway. Attach the sash cord above and the elastic cord below and then go to it. It is a fascinating, entertaining sport, never becoming dull or tiresome, and makes for better, stronger physical condition, clearer brains, keener eyes and better nerves and appetite.—Airubber Corporation, 581-589 East Illinois street, Chicago, Illinois.

Improved Rubber Gloves

The improved process developed by the Lincoln Rubber Co., Akron, Ohio, in the manufacture of rubber gloves assures greater resistance, flexibility and aging in varying climatic conditions. The surface of the rubber gloves is clear, smooth, and does not require any surface filling such as talc or starch which rub or wash off at first use. The pores of the gloves are free from acid and possess a healthy texture. The improved process household glove has been received with favor in various localities, especially the fruit districts of the northwest, California, New York, eastern markets

and England. Another development, the Knuklfit, has proven to be a successful style in an advance class of rubber gloves.

Assorted Rubber Bands

A most attractive assortment of rubber bands is being made up by Eberhard Faber, 37 Greenpoint avenue, Brooklyn, New York, and distributed under the name of Ruby rubber bands. This assortment consists of different sizes of bands, packed in enameled boxes which are made up in assorted colors, and prove most useful in the busy office.

Ruby Bands

Special Rubber Belts

Practically all modern high speed machinery is equipped with woven endless fabric belts, and where the belt must operate under severe conditions, as the automobile fan, or is exposed to water or dampness, as electrically driven labor saving devices for the home, it has been found advisable to combine the fabric with rubber.

The rubber belt illustrated has remarkable flexibility, low stretch and slippage, and quiet, smooth running characteristics. The cords are placed at the neutral axis where they are not subjected to stretching or compression as the belt passes around the pulleys and so eliminate internal friction, the cause of rapid belt destruction. Because of its flexibility it can be employed on electric motor drives, the power loss in bending the belt around the pulleys being so small as to be almost negligible. On machines where space does not permit the use of belts sufficiently wide to properly carry the load, a "V" drive is well adapted to meet the situation. It provides sufficient contact surface on narrow pulleys.

The same manufacturers also put out molded rubber belts which are adapted to all drives and particularly recommended

Gilmer "V" Belt

for heavy duty, while the fabric rubber belts are intended to supply the need of a good belt at a low price. Still another form is the endless flat cord belt, which is ideal for difficult drives where a splice is objectionable.—L. H. Gilmer Co., Tacony, Philadelphia, Pennsylvania.

Plug Rubber Patch

The Locktite patch kit now includes a large piece of plug rubber which may be used without vulcanizing in connection with the fabric-back patch for repairing blow-outs, casing holes and bruises. It is a chunk of soft, pliable rubber, specially prepared, a piece of which may be stuck in the hole, when it quickly works its way to every corner of a casing break and completely fills it before the patch is applied in several layers to repair the casing.—The Locktite Patch Co., Detroit, Michigan.

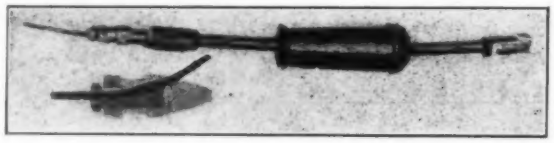
Revolvable Rubber Heel

In appearance the Evernu is just an ordinary rubber heel, the manner of renewing its own worn rear edge is not disclosed until the shoe is turned upside down. It is provided with a turnable rubber disk which remains firm and tight until such time as the heel becomes worn when the edge of the disk is lifted between the thumb and forefinger—given a quarter turn—and in three seconds the shoe is equipped with a new heel, without recourse to tools and without any delay. Low or high shoes may be fitted with these heels.—Evernu Rubber Heel Corporation, Pershing Square Building, Park avenue and 42nd street, New York, N. Y.

Evernu Heel

Aerial Rubber Insulator

The "Everdry" aerial insulator is made of rubber, the strain being taken by very fine cotton threads, of which the fibers are impregnated with rubber similar to an auto tire. At each end the threads pass round ebonite blocks, are covered with rubber, and

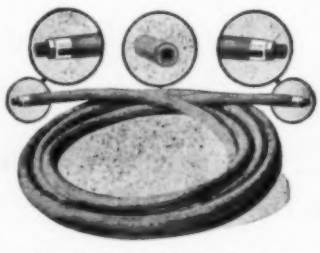


"Everdry" Insulator

vulcanized together. A coating of non-hygroscopic enamel protects the rubber from the atmosphere, moisture cannot condense on it and it is further provided with a cup which keeps a portion of the insulator dry in wet weather. It has a non-slip grip with swivels at each end, and, to reduce the weight, the shackles are made of "Duralumin." It weighs 2¼ ounces with a breaking strain which exceeds 350 pounds; a smaller type weighing only ¾ ounces, however, is available.—Silvertown Co., (India-Rubber, Gutta-Percha & Telegraph Works Co., Ltd.) 106 Cannon street London, E. C. 4, England.

Air Hose

The Vitalic Air Hose is built in fifty-foot lengths, the fabric being open weave and heavier than that ordinarily used in order to give better service than hose made with finer mesh fabric. The purpose of the fabric and friction is to protect the tube, as the tube only is air tight and a single small cut will cause the hose to leak the entire length. The tube of Vitalic hose is very heavy and will successfully resist heat and oil.



Vitalic Extra Heavy Air Hose

A feature which is a decided advantage to the garage man are the couplings which will be inserted in the factory doing away with the possibility of the tube being torn by carelessness or by using the wrong size chuck.—Continental Rubber Works, Erie, Pennsylvania.

Doll's Waterproof Cape

The kiddies will delight in the new dolls' capes which are made of soft rubber in pretty, bright colors, and fashioned with little hood effects which tie under the chin with streamers of contrasting colors. They are guaranteed waterproof and washable.—The Brooklyn Shield & Rubber Co., 397 Sumner avenue, Brooklyn, New York.

Rubber Covered Insulators

Radio Antenna Supports

These antenna, ground and lead-in wire supports are a great improvement over the ordinary large, unsightly insulator as the screw is small, starts readily, makes a finished job, and has a rubber ring padding on both sides. They keep the wires in place and out of the way, and may be used for many other purposes besides the radio.—Culver-Stearns Manufacturing Co., Worcester, Massachusetts.

Children's Rubber Outing Suits

A boon to mothers will be these "Rainy Play" suits which make it possible for children to play outdoors in all kinds of weather, keeping dry and comfortable. The leggings and pants are made in one piece, shaped like riding pants and worn with suspenders, the lower part having a strap which fastens under the shoe, the strap being secured to a tab which prevents the pants from drawing. The coat is pulled on over the head, a separate belt with pockets holding it in at the waistline. The hood also is separate, much like a helmet, and has slits over the ears which enable the child to hear.—Frances W. MacKay, Silver Mine, Norwalk, Connecticut.

"Rainy Play" Suit

Varnish for Rubberized Cloth

The Hilo Varnish Corporation, Marcy and Flushing avenues, Brooklyn, New York, has just developed a new varnish which gives a very high and durable gloss on rubber cloth, making it suitable for sedan top material. The same company manufactures other grades of varnish used on rubber shoes and rubberized cloth.

Agriculturists Use Rubber Hose

One of the latest uses to which rubber hose may be put has been developed by California agriculturists. Because of the failure of cultivating implements to break the soil deeply enough around the trees to allow plenty of air to reach the roots, an experiment was made of forcing air into the earth under a pressure of 200 pounds. Several lines of sturdy air-drill hose were run from the compressor, each having a hollow, pointed, perforated metal terminal which was thrust into the earth at various points beneath the trees. It is thought that this method will be widely adopted, as the results of such injection of fresh and expulsion of stale air will result in healthier trees and better fruit, particularly in orange groves in which owners use trucks on which are mounted gasoline-driven air compressors such as are employed for pneumatic tools. Another advantage which the compressed air method has over the old-time cultivator is the opening up of the soil close to the tree trunk as well as between the tree rows.

Uncured Rubber Soling

In the Wescott sole new, clean cotton felt is completely impregnated with pure latex rubber, the resulting product possessing the long life and flexibility of unvulcanized rubber latex together with the tensile strength, firmness and lightness of cotton felt. It is extremely light, will float in water and is non-skid even on wet surfaces. Wescott may be stitched as closely as eleven or twelve stitches to the inch with no danger of cutting, distortion or disintegration in wear.—United Shoe Machinery Corporation, Albany Building, Boston, Massachusetts.

Wescott Sole

Flexible Rubber Lamp

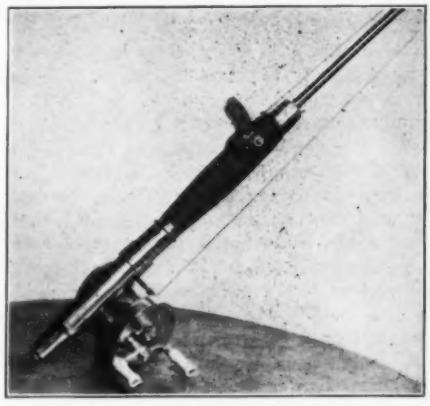
The "Rubbolite" unbreakable rubber tail lamp is well made and of neat appearance, giving a clear steady illumination of number plate. Vibration cannot injure bulbs, broken glasses can be instantly replaced, and damage to lamp from collision is impossible. Each model is equipped with an adapter and extra glasses.

These lamps have been tested by Scotland Yard and authorized by them for trial on a percentage of London taxicabs with a view to their being approved for such cabs.—Flexible Lamps, Ltd., 102, Wigmore street, London, W. 1., England.

"Rubbolite" Unbreakable Lamp

Rubber Fish Hook Holder

A novelty which will appeal to all fishermen is a soft rubber shield made to fit around the hand grip of a fly rod, but which is also applicable to other types of rods. The illustration shows the shield when open, the angler, when he wishes to move from one spot to another, simply inserts the hook, snaps the rubber band and so does away with all danger of catching the hook in the bushes, etc. This device is called the Davis Safety Holder and is manufactured by the Ranier Novelty Co., Renton, Washington, for those who appreciate fishing tackle refinement.



Davis Safety Holder

Printed Designs for Rubber Goods

The Brooklyn Shield & Rubber Co., 397 Sumner avenue, Brooklyn, New York, has perfected a process of printing textile effects which are sharply color etched into sheet rubber and are guaranteed not to peel or wash off. There are a great variety of beautiful designs, which are used in different combinations. These designs are printed not only on goods manufactured by their own company but for other manufacturers as well.

Annual Dinner of the Rubber Trade Association

Annual Banquet of the Rubber Trade Association of New York

THE customary annual banquet of the Rubber Trade Association was held Thursday evening, December 17, 1925, at the Hotel Roosevelt, Madison avenue at Forty-fifth street, New York, N. Y. The attendance numbered about 200 and, as usual, the event was a most enjoyable social meeting of members of the Association and their guests. Discussion of the excellent menu was enlivened with music by the orchestra.

In the absence of H. A. Astlett, president of the association, Vice-President F. Pusinelli presided at the banquet. The special guests and speakers were Hon. C. C. Dill, United States Senator from the state of Washington, W. O. Rutherford, president of the Rubber Association of America and Con McCole.

W. O. Rutherford was the first speaker of the evening and discussed the perils that are threatening the rubber manufacturers and their customers, and the prospects of averting them. In his remarks Mr. Rutherford expressed the opinion that the world's consumption of rubber will increase 5 per cent in 1926. It is now 550,000 long tons and the predicted increase will raise this total to over 575,000 tons. The crude rubber consumption of the United States is estimated at 400,000 long tons for 1926. He said that American rubber manufacturers can get along with less than that amount of rubber, if they must, by continuing still further the increased use of reclaims.

The present emergency in the supply of rubber and its high price has led to closer laboratory study of its use for the production of cheaper quality tires. In fact, it is possible that some tires will be made of so low a quality that their manufacturers will not place their names upon them. The production of automobiles in 1925 will probably total 4,000,000 vehicles and the output for 1926 may be somewhat less, but still the increasing demand for tires will go on apace.

The Hon. C. C. Dill discussed at length the general industrial and trade prosperity in the United States, quoting statistics of production and consumption in many lines and showing that while the population of the United States is but 6 per cent of that of the world it consumes practically 90 per cent of the world's production of crude rubber.

The remarks of Con McCole were highly interesting and entertaining, contributing greatly to the general enjoyment of the occasion and brought to a close this annual event of the Association.

GOVERNMENT RUBBER PRICE INVESTIGATION

The prevailing high prices for crude rubber are due to the market situation created by the Stevenson plan restricting the output of plantation rubber. An investigation of crude rubber prices is proposed under a resolution introduced in the House of Representatives, December 18, by Representative Tilson of Connecticut, Republican leader of the House. The resolution which is favored by Secretary of Commerce Hoover provides for an inquiry by the Committee on Interstate and Foreign Commerce into the alleged monopolistic price fixing control by certain foreign governments of export commodities naming rubber, coffee, nitrates, potash and sisal.

Secretary Hoover in a letter addressed to Senator Arthur Capper has outlined a plan of action against the British rubber restriction. He does not favor a trade reprisal policy but recommends that American bankers refuse credit to such combinations and that economies in the use of rubber be effected such as conserving rubber by increasing the use of reclaimed rubber and other substitutes; eliminating the manufacture of unnecessary articles and reducing the waste of discarding partly worn out tires by repairing them. He would also provide machinery to prevent American buyers from bidding against each other.

DURING OCTOBER THE UNITED STATES IMPORTED FROM FRANCE 1,824 rubber tires, value $35,792. Similar imports from the same source during earlier months of the year were: June, 7,011 casings, value $59,118; July, 6,090, value $73,992; and August, 2,949, value $59,236. During the entire year 1924 the totals from leading countries were: France, 181,710 casings, value $1,072,643; Canada, 1,486 casings, value $21,729; and Great Britain 355 casings, value $3,571

Centennial of American Rubber Industry

THE American rubber shoe industry was started in 1825 when Thomas C. Wales of Boston, Massachusetts, began the importation of native-made gum shoes from Brazil. These shoes, although clumsy and uncured, were popular forerunners of rubber footwear as it is known today, and the development which followed was dependent primarily upon the discovery of vulcanization by Charles Goodyear in 1839.

On the evening of December 7, 1925, about 250 rubber men gathered at the New Chamber of Commerce Building, Boston, Massachusetts, to celebrate the centennial anniversary of the establishment of the rubber industry in the United States by Thomas C. Wales. This celebration was due to the efforts of Quincy Tucker, of Boston, under whose management the affair was most successfully conducted.

The banquet was preceded by a reception during which a short paper on rubber latex was read by S. B. Neiley, of the Rubber Latex Research Corporation, who briefly outlined the source and nature of rubber latex.

The dinner took place in the large banquet hall, during which a demonstration was given of the native method of coagulating latex on a shoe last to show how gum shoes imported by Wales were produced.

Chairman Tucker nominated a committee to investigate the feasibility of organizing a local rubber club. Following this, Day Baker, president of the Massachusetts Auto Dealers & Garage Association, read a letter of regret from Governor Fuller of Massachusetts and a telegram of congratulation from Henry C. Pearson, Editor of *The India Rubber World*, who is now making a trip to points in the Orient of rubber producing interest. Preliminary to the introduction of the speakers, Mr. Baker briefly reviewed the need and the success of rubber paving for the suppression of street traffic noise.

Durward E. Burchell, representing the Bureau of Commerce and Industry of the Boston Chamber of Commerce, made an address of welcome in which he stressed the fact that success of all New England industries can best be maintained by bringing to bear on their problems the forces of imagination, foresight and constructive thinking made effective through the exercise of the spirit of cooperation. By thus emulating the devotion of her early industrial and commercial leaders typified by Thomas C. Wales the industrial position of New England can be developed and made permanent.

Paul L. Palmerton, chief of the rubber division of the United States Department of Commerce, spoke on the crude rubber situation, and reviewed the growth of the rubber industry in the United States. The earliest date that rubber imports were listed separately was 1849 in which year 345,020 pairs of rubber shoes, valued at $52,335 or 15 cents a pair, were imported from Brazil. Mr. Palmerton discussed the impending shortage in crude rubber supply, tracing the situation from the heavy slump of 1920 in crude rubber demand and prices which resulted in the restriction of rubber exports from British controlled plantations. The increasing use of automobiles, motor buses and balloon tires has caused a shortage of supply, and brought about several increases in the price of rubber goods, particularly tires, to the ultimate consumers.

Banquet Celebrating the One Hundredth Anniversary of the Rubber Industry, Boston, December 7, 1925

It is estimated that the consumption of crude rubber in 1926 will reach 420,000 tons in the United States and from 160,000 to 170,000 tons in all other countries. Automobile construction will probably decline moderately next year, but the demand for tire replacement is certain to increase.

Mr. Palmerton recommended the following methods of conservation to alleviate the crude rubber shortage: (1) Conservation of tires by consumers and consistent tire repairs which will prolong tire life; (2) The increased use of reclaims; (3) Active exploitation of wild rubber sources.

Future relief is some years ahead, as it depends largely on increase in plantation areas. The estimated new planting needed

is 1,500,000 acres. The stimulation in the matter of this increase should proceed from the rubber manufacturers themselves. As a guide for this project the United States Government has made a world survey of rubber planting areas. These are discussed in five separate reports, the first three of which have already been published.

William F. Williams, Massachusetts State Commissioner of Public Works, spoke on roads as affecting the growth of the tire industry. The state highways of Massachusetts have been extended on the pay-as-you-go principle, the car owners being assessed for a large part of the cost, whereas many other states have incurred many millions of dollars in bonded indebtedness for new roads. He described the current methods of state highway construction and urged his audience as tire men in touch with the driving public to do all in their power to reduce reckless driving.

Quincy Tucker gave a brief sketch of Thomas C. Wales, the Boston merchant who, seeing the native rubber shoes brought to Boston by sailors returning from Brazil, conceived the idea of importing them as an article of trade thus originating the rubber shoe trade. Mr. Tucker referred to the work of Charles Goodyear of Woburn, Massachusetts, who discovered the vulcanization of rubber in 1839. He outlined the labors of Sir Henry Wickham of England who by bringing the first Hevea seeds to Kew Gardens, London, became the founder of the rubber plantation industry.

David A. Cutler, president of the Alfred Hale Rubber Co., Atlantic, Massachusetts, gave his hearers an interesting and informative sketch of the guayule shrub of Mexico and Texas, recounting briefly the story of its gathering and the method employed for extraction of the guayule rubber.

James H. Stedman, president of Stedman Products Co., South Braintree, Massachusetts, speaking on new uses for rubber and new color schemes in rubber, discussed the possibilities, both practical and artistic, of rubber for permanent floor covering and as wall finish and wainscoting. Practically any color scheme in solid or blended marbelized effects is now available in rubber. Even pictures are possible as samples on exhibition showed.

The affair was most successful as the celebration of an important event in the annals of the rubber industry and reflected much credit on the promoter of this event and his able committee of arrangements.

An Attempt to Explain the Action of Vulcanization Accelerators

THE following excerpts are from Professor B. Bysow's interesting paper,[1] in which he reviews the theories of others in regard to the action of accelerators and the nature of vulcanization and offers his own explanation on the subject.

The existing theories tend to explain the action of accelerators by means of different relations which all lead to the formation of immediate sulphides or polysulphides, finally splitting off their sulphur and adding it to the rubber hydrocarbon. This addition accomplishes the vulcanization. In accordance with this assumption the whole attention of investigators has been directed toward finding a way in which sulphur could be split off in some more active modification, facilitating its combination with rubber. Nevertheless several accelerators, derivatives of nitrogen, for example, diphenylguanidine, not only do not raise, but even lower the binding of sulphur by rubber.

These accelerators evidently do not suit the aforesaid theories. It is clear, consequently, that there are substances the activity of which has no connection with the transfer of sulphur to rubber. As long as study of this subject is based exclusively on the chemical point of view progress will not be made in the understanding of the acceleration of vulcanization and allied phenomena. More attention must be devoted to the physico-chemical methods and considerations, especially as it is by this road that we are gradually gaining a comprehension of the vulcanization process itself. Vulcanization is classically defined as a process by which rubber acquires more perfect elasticity and loses its solubility in its solvents.

There are other conditions under which rubber, without being vulcanized, undergoes changes of elasticity and solubility. Rubber mixed with finest modern carbon black becomes less soluble. Also a similar influence of different mineral ingredients on plasticity of milled rubber is known. It is clear that fine mineral powders, adhering to rubber, ought to increase its resistance to deformation and improve its elastic properties. A most striking change is made when a precipitate is formed within rubber. For instance, rubber is dissolved in amylacetate, and another solution is prepared by dissolving ferric chloride in the same liquid. Pouring both solutions together and evaporating the solvent yields rubber as a thin film in which the ferric chloride is dissolved. The action of hydrogen sulphide or ammonia water on this film precipitates ferrous sulphide or ferric hydroxide, which are thoroughly distributed within the rubber and create the qualities characterizing vulcanized rubber, increased elasticity and lowered solubility.

Returning to accelerators, their action is characterized by increasing the amount of combined sulphur and by raising elasticity. There are no cases where an accelerator only improves the binding of sulphur and exerts no action on the elastic properties. The last is evidently a consequence of the former. The effect produced by the accelerator can be greater or equal to that of a parallel blind test, but at any rate it can be got in shorter time or at a lower temperature of vulcanization. That means that in the presence of an accelerator the fall of solubility, the rise of elasticity and sometimes the binding of sulphur proceed faster and more intensely.

Conclusion

The role of accelerators can be explained on the basis of the following hypotheses: (1) Such substance is an accelerator in which rubber can swell. Naturally the amount must not be high, otherwise the rubber would lose its solubility. (2) Any substance which is soluble in rubber and dissolves sulphur at the same time will act as an accelerator, as it facilitates the distribution of sulphur. It is better when the solubility of sulphur in this substance is lower than that of rubber. (3) Any substance soluble in rubber and able to form under convenient conditions an insoluble precipitate would be an accelerator. (4) In general any increase, in certain limits, of internal surfaces separating the phases of the system will produce acceleration of vulcanization. All of the known accelerators are connected with all or some of these types. It is clear that we need not confine ourselves to solid or liquid substances as we can also take gaseous accelerators, for instance, water vapor, ammonia, hydrogen, hydrogen sulphide, aldehyde vapor, etc.

[1] *The India Rubber Journal, November 7, 1926, 859-860.*

ACCORDING TO COMMERCE REPORTS, THE LEADING TIRE MANUFACturing countries of the world have during the first nine months of 1925 exported casings in the following numbers: France, 1,466,990; United States, 1,370,829; Canada, 665,566; United Kingdom, 650,731; Italy, 596,900; and Germany, 117,495.

News of the American Rubber Trade

Rubber Industry Outlook

GENERAL business and industry have just closed a year of prosperity that bids fair to continue into 1926. During the first nine months of 1925 the manufacturing companies produced 2 per cent fewer tires, and 2 per cent more inner tubes, than in the corresponding period of 1924. The progressive increase in the price of crude rubber has been met at intervals by advances in tire prices and by attaining greater efficiency in tire manufacture.

Car production for 1925 is estimated to have exceeded that of the record year 1923. Looking ahead, the favorable indications for the new year are the low prices and attractive quality of the cars now manufactured, the signs of general industrial advance and continuance of purchasing power. In truck and bus production 1925 was a big year and the business is on a solid foundation, building having progressed strictly with demand. The attitude of the railroads toward the motor truck is highly favorable. They have ascertained by study and experiment that the motor truck is the solution to congestion at freight terminals, and their use of trucks is certain to extend. The motor bus is one of the greatest outlets for truck builders. Bus lines are increasing in numbers so rapidly that the prediction has been made that 300,000 buses will be in operation in the United States by 1930.

The recent resolution in Congress directing an inquiry into the subject of alleged price manipulation in crude rubber has directed public attention to the higher prices it is destined to pay for its tires. This action has also aroused the interest of the League of Nations, as it considers America as a prospective participant in the League's economic conference, preparatory work for which will soon commence.

The production of tires and tubes during the last quarter has proceeded conservatively. Shipments have increased and inventories decreased. Also the consumption of rubber and cotton have declined.

Financial

Goodyear Issues Gold Notes

The Goodyear Tire & Rubber Co., Akron, Ohio, has issued $15,000,000, three-year 5 per cent gold notes, and offered by a syndicate headed by Dillon, Read & Co. at a price of 99¼ and interest, to yield about 5.25 per cent. The proceeds will supply the company with additional working capital to meet increased costs of crude rubber. The issue is redeemable as a whole or in part by lot, after thirty days' notice, at 101 and interest on June 15, 1926, and thereafter on any interest date at 100½ and interest.

Fisk Dividend Payment and New Financing

The directors of The Fisk Rubber Co., Chicopee Falls, Massachusetts, have voted to liquidate preferred stock dividends and to provide additional working capital. Accumulated dividends on the first preferred stock amount to $26 a share and on the second preferred stock to about $31 a share. In settlement of the dividends on the first preferred stock it is proposed to offer stockholders $1.00 in cash and $25 in first preferred convertible stock which will be entitled to 7 per cent dividends ranking equally with the present first preferred stock and will be convertible into four shares of common stock at any time up to December 31, 1935. When all the dividends on the first preferred stock are paid, it is proposed to offer to second preferred stockholders in payment of their accumulated dividends, common stock to be taken at a valuation of not less than $25 a share.

In view of the increase of rubber to $1.00 a pound it is desirable to procure additional working capital as insurance against contingencies which may arise, therefore the issue of not to exceed $10,000,000 short term notes, is authorized. The company reports estimated net earnings available for dividends for the year ended October 31 of $7,500,000.

Annual Statement of the Firestone Tire & Rubber Co.

On behalf of the Board of Directors, I present herewith report for the fiscal year ending October 31, 1925.

This year completed our Silver Anniversary and proved to be an unusual year. The sales of the parent company and subsidiaries in the United States were $125,598,000—the largest in the history of the company—compared with $85,610,000 last year, or an increase of over 46 per cent. Our net profits after providing for depreciation, interest, Federal taxes and certain contingencies were $12,800,412. After deducting dividends on Preferred Stock, the net profit applicable to Common Stock was more than $32.00 per share. Our book surplus has been increased to $39,762,281 and reserve for general contingencies to $5,000,000.

The operation of the British Rubber Restriction Act has reduced the world's working supply of rubber far below the normal requirements of the industry. This has caused a great increase in the price of rubber during the year, ranging from a low of 36 cents to a high of $1.23, with the present price around $1.00 per pound. Due to this increased cost of crude rubber and the rapidly expanding business of your company, your directors deemed it advisable to provide further working capital and during the past month have issued an additional $10,000,000 of the authorized 7 per cent Preferred Stock. Before this financing, the company again closed its fiscal year with no bank indebtedness.

Your company has always been progressive in securing its basic raw materials direct from their source of supply. When the Stevenson Rubber Restriction Act when into effect in November, 1922, restricting the production and exportation of crude rubber from the British Colonies, we realized it would eventually create a shortage and very high prices and we became active in increasing our rubber supply direct from the plantations and in developing new sources of supply. We advised you last year that we had increased our washing and refining plant in Singapore, established additional purchasing offices in the Far East (4 of these in British and 3 in Dutch territory) and we also advised you that we had an organization on the West Coast of Africa in Liberia where we hoped to develop an important rubber growing industry. Firestone Plantations Co. has in the past year, secured a ninety-nine year lease on a million acres, 2,000 of which were planted in 1910 with Hevea trees. These trees are in full bearing and we are receiving increased quantities of rubber from Liberia each month. We have also leased, with option to purchase, a 35,000 acre plantation in the State of Chiapas, Mexico, 350 acres of which are planted with Hevea trees and a much larger tract with Castilloa trees. We have a small organization there installing tapping and refining equipment and will soon be receiving a considerable quantity of rubber from this source.

The Xylos Rubber Co., Akron, Ohio, has quadrupled its plant capacity during the last year in order to take care of the increased demand of its trade for reclaimed rubber and hereafter will operate as an independent unit.

Our other subsidiaries, The Firestone Steel Products Co., Akron, Ohio (rim division), Firestone Tire & Rubber Co. of Canada, Limited (tire factory at Hamilton, Ontario), Firestone-Apsley Rubber Co., Hudson, Massachusetts (boot and shoe division), Firestone Cotton Mills, Fall River, Massachusetts (tire fabrics), and The Firestone Tire & Rubber Co. (S. S.) Ltd., Singapore (rubber purchasing and preparation mill), have largely increased their business, making it necessary for them to increase their plants and equipment.

During the past year, practically all of the automobile manufacturers have adopted the balloon tire as standard equipment. The increasing use of pneumatic bus and truck tires and the growing demand for Firestone tires give us every reason to look forward to a satisfactory year.

Respectfully submitted,

H. S. Firestone,
President.

AKRON, OHIO.
DECEMBER, 15, 1925

CONSOLIDATED BALANCE SHEET AT THE CLOSE OF BUSINESS OCTOBER 31, 1925

ASSETS

CASH:			
On deposit in banks and on hand			$5,470,876.54
Receivables:			
Customers' notes		$ 108,328.47	
Customers' accounts, less allowance for doubtful accounts, discounts, etc.		12,974,289.80	
Controlled and allied companies		753,819.41	
Miscellaneous accounts and advances		363,405.23	14,199,842.91
INVENTORIES:			
Finished and in process goods, raw materials and supplies			21,254,020.00
THE FIRESTONE PARK LAND CO.:			
House and lot accounts receivable, unsold real estate, etc		$3,514,985.61	
Less: mortgages thereon, bonds outstanding and accrued interest		2,746,842.58	768,143.03
OTHER ACCOUNTS:			
Due from officers and employes on account of purchase of common capital stock and advances, secured by 37,521 shares as collateral			3,157,830.16
INVESTMENTS:			
Capital stock of foreign subsidiary companies		$3,658,500.00	
Other stocks and bonds		86,917.25	3,745,417.25
TREASURY STOCK:			
Pref. and com. shares purchased at cost			86,953.82
FIRESTONE COTTON MILLS:			
Land, buildings, machinery and equip		$2,843,522.50	
Less: Mortgage bonds outstanding		2,000,000.00	843,522.50
REAL ESTATE, PLANTS, etc.:			
Land, buildings, machinery and equipment, less allowance for depreciation			22,250,449.57
DEFERRED CHARGES:			
Prepaid insurance and taxes		$ 35,520.21	
Miscellaneous deferred items		485,959.26	521,479.47
			$72,298,535.25

LIABILITIES

ACCOUNTS PAYABLE:			
For purchases, payrolls, etc		$3,948,986.94	
Customers' credit balances		48,186.07	$3,997,173.01
ACCRUED FEDERAL AND LOCAL TAXES:			
Interest, etc			2,620,720.96
RESERVE:			
For general contingencies			5,000,000.00
CAPITAL STOCK:			
Preferred			
The Firestone Tire & Rubber Co.			
6% Cumulative:			
Authorized ($10,000,000.00)			
Issued	$10,000,000.00		
Less: Retired	2,000,000.00	$8,000,000.00	
7% Cumulative:			
Authorized ($40,000,000.00)			
Issued	10,000,000.00		
Less: Retired	1,619,100.00	8,380,900.00	
FIRESTONE-APSLEY RUBBER CO.			
7% Cumulative:			
Authorized ($1,000,000.00)			
Issued	1,000,000.00		
Less: Retired	42,800.00	957,200.00	17,338,100.00
COMMON:			
Authorized ($25,000,000.00)			
Issued	3,750,000.00		
Less Treasury	169,740.00	$3,580,260.00	
SURPLUS:			
General surplus	$38,180,339.73		
Insurance account surplus	1,581,941.55	39,762,281.28	43,342,541.28
			$72,298,535.25

Dutch American Rubber Plantation Co.

The Dutch American Rubber Plantation Co., capitalized at 6,000,000 guilders ($2,400,000) will issue 1,000,000 guilders capital stock of which 500,000 guilders are offered in Guaranty Trust Co., depositary receipts at $40 per share of 100 guilders. The company has acquired 350,000 guilders par value capital stock, Crown Leaseholds (expiring 1987 to 1995), covering some 18,865 acres, at the low annual rental of 23 cents per acre, located in the Lampong District, South Sumatra, Dutch East Indies.

Dividends Declared

COMPANY	STOCK	RATE	PAYABLE	STOCK OF RECORD
Akron Rubber Reclaiming Co.	Pfd.	2% q.	Dec. 21	Dec. 15
Canadian Consolidated Rub. Co., Ltd.	Pfd.	1¾% q.	Dec. 31	Dec. 18
Firestone-Apsley Rubber Co.	Pfd.	3½% semi-an.	Jan. 1	Dec. 28
Firestone Tire & Rubber Co.	Com. Ex.	$1.00	Jan. 2	Dec. 21
Firestone Tire & Rubber Co.	Com.	$1.50	Jan. 20	Jan. 10
Firestone Tire & Rubber Co.	6% Pfd.	1½% q.	Jan. 15	Jan. 1
Firestone Tire & Rubber Co.	7% Pfd.	1¾% q.	Feb. 15	Feb. 1
General Tire & Rubber Co.	Com. Ex.	6%	Dec. 20	Dec. 10
General Tire & Rubber Co.	Pfd.	1¾% q.	Jan. 2	Dec. 19
Goodyear Tire & Rubber Co. of Canada	Pfd.	1¾% q.	Jan. 2	Dec. 14
Overman Cushion Tire Co., Inc.	Pfd.	$1.75 q.	Jan. 1	.....
Overman Cushion Tire Co., Inc.	Com. (A)	1½%	Jan. 1	Dec. 18
Overman Cushion Tire Co., Inc.	Com. (B)	1½%	Jan. 1	Dec. 18

New York Stock Exchange Quotations

DECEMBER 22, 1925

	HIGH	LOW	LAST
Ajax Rubber, com.	10⅜	10⅝	10⅝
Fisk Rubber, com.	21¾	21¾	21¼
Fisk Rubber, 1st pfd. (7)	112½	112	112
Goodrich, B. F., Co., com. (4)	62	60¼	60¼
Goodyear Tire & Rubber, pfd. (7)	104	104	104
Kelly-Springfield Tire, com.	18⅛	17⅜	17⅜
Kelly-Springfield Tire, 1st pfd.	69¼	69¼	69¼
Keystone Tire & Rubber, com.	2	2	2
Norwalk Tire & Rubber (1.60), com.	13⅞	13¾	13⅞
United States Rubber, com.	80⅞	76¾	77½
United States Rubber, 1st pfd. (8)	106¾	106	106¼

Akron Rubber Stock Quotations

Quotations of December 23, supplied by Otis & Co., Cleveland, Ohio.

COMPANY	LAST SALE	BID	ASKED
Falls com.	9	9	10
Falls pfd.	18¾	18	19
Faultless com.	40	39½	44
Firestone com.	122	122	125⅛
Firestone 1st pfd.	101½	101¼	...
Firestone 2nd pfd.	99¼	99¼	99¾
General com.	415	...	400
General pfd.	102¾	103¼	...
Goodrich com.	69	...	...
Goodrich pfd.	99½	...	...
Goodyear com. V. T. C.	38	35	37½
Goodyear pfd. V. T. C.	103¼	...	...
Goodyear pr. pfd. V. T. C.	104¼	...	...
India com.	160	135	160
Miller com.	39	34	...
Miller, pfd.	101	100¾	101
Mohawk com.	80	...	84
Mohawk, pfd.	80	78¾	...
Seiberling com.	26½	26½	28
Seiberling pfd.	98	...	98
Star com.	11	...	...
Star pfd.	35	...	...
Swinehart com.	9	9	20

DAVOL CHRISTMAS DINNER

The annual Christmas banquet of the foremen and executives of the Davol Rubber Co., Providence, Rhode Island, was held on the evening of December 21 at the Hotel Dreyfus with about sixty department heads present. L. R. Nordine officiated as toastmaster and the speakers included General Manager P. R. Wesley; Secretary C. B. Banforth; Sales Manager R. J. Fres; Assistant Sales Manager Walter Davol and Superintendent Jesse Little. A Christmas tree was one of the features but the presents on it instead of being distributed to the diners was sent to one of the agencies distributing toys and gifts to poor children.

New Incorporations

B. & N. TIRE DEALERS, Inc., November 24, 1925 (New York), $2,000. Incorporators: Ralph V. Blake, general manager and treasurer; Hulda V. Blake, president; Roy E. Nicholson, assistant manager and secretary. Principal office, 329 Main street, Canandaigua, New York. To sell tires and automobile accessories.

THE CHICAGO BELTING CO., INC., November 14 (Delaware), $500,000, par value $100. Incorporators: Edward H. and Charles A. Ball, both of Winnetka; Sara R. B. Ball, Evanston, both in Illinois; Andrew M. Kistler, Morganton, North Carolina, and H. Frederick Lesh, Boston, Massachusetts. Principal office with the Corporation Trust Co. of America, DuPont Building, Wilmington, Delaware. To manufacture and sell belting for the transmission of power and other uses.

EASTERN RUBBER PRODUCTS CO., December 15, 1925 (Delaware), capital stock 1,000 shares, par value $10. Incorporators: H. O. Johnson, 847 Marlyn road, George V. Strong, 34 West Southampton avenue and John Jamison, 15 Benezet street, all of Philadelphia, Pennsylvania. Principal office with the Capital Trust Co. of Delaware, Dover, Delaware. To deal in all kinds of rubber.

EVERLIVE RUBBER CORPORATION, November 27, 1925 (New York), capital stock $600,000, par value $10. Incorporators: P. W. Quinn and Chas. E. LeBarbier, both of 19 West 44th street, New York City, and M. M. McAlevey, 181 Eighth street, Brooklyn, New York. Principal office, Manhattan, New York. To manufacture rubber.

THE FALLS RUBBER CO., October 9 (Ohio), $500. Incorporators: J. O. King, president; G. D. Kratz, vice-president; W. P. Cline, secretary and treasurer; W. S. Campbell, sales manager, and F. H. Comey. Principal office, 641 E. Butchel avenue, Akron, Ohio. To deal in tires and tubes.

THE FLORITE MANUFACTURING CO., November 16 (Delaware), $750,000, par value $10. Incorporators: T. L. Croteau, A. L. Miller, and Alfred Jervis, all of Wilmington, Delaware. Principal office with the Corporation Trust Company of America, DuPont Building, Wilmington, Delaware. To deal in reinforced composition strips and other articles of all kinds made of rubber.

GENERAL TIRE SALES, November 24, 1925 (Delaware), capital stock $10,000, par value $100. Incorporators: Vaughan C. Warren, Wilmington, Delaware; Mark W. Cole, Dover, both in Delaware, and Chester A. Powers of Chester, Pennsylvania. Principal office with Eli Franklin Burris, Houston, Delaware. To buy, sell and deal in tires and automobile accessories.

THE HYDRO UNITED TIRE CORPORATION, November 17 (Delaware), $1,500,000, par value $5. Incorporators: F. R. Hansell, J. Vernon Pimm, both of Philadelphia, Pennsylvania, and E. M. MacFarland, of Camden, New Jersey. Principal office with the Corporation Guarantee & Trust Company, 927 Market street, Wilmington, Delaware. To manufacture and deal in tires, tubes and rubber goods.

MAYFAIR TIRE CORPORATION, November 23, 1925 (New York), capital $50,000, 250 shares preferred stock $100 par value and 25,000 shares common stock, $1 par value. Incorporators: Max Frankel, 215 West 92nd street; Al Goldstein, 145 West 55th street; and R. H. Blum, 17 East 42nd street, all of New York, New York. Principal office, Manhattan, New York. To deal in tires and auto accessories.

NO TAX RUBBER SOLE CORPORATION, December 3, 1925 (New Jersey), 2,500 shares, no par value. Incorporators: Seth R. Milbury, 789 Stuyvesant avenue, Irvington, New Jersey; Morris Kreisberg, 583 Huntingdon street, Newark, and Samuel Yeatman, 384 Stephen street, Belleville, all of New Jersey. Principal office, 789 Stuyvesant avenue, Irvington, New Jersey. To manufacture rubber soles, boots and composition soles and equipment of all kinds for making boots and rubber articles.

THE PAULISTIC CO., November 19 (Massachusetts), $50,000. Incorporators: Louis S. Ross, Newton; Arthur H. Paul and Charles G. Clark, both of Waltham, both in Massachusetts. Principal office, 131 Lexington street, Waltham, Massachusetts. To manufacture knitted elastic.

RUBBER EXCHANGE CLEARING HOUSE, Inc., December 24, 1925 (New York), capital $5,000, par value $25. Incorporators: Edward Maurer, 81 Fulton street; Fred. W. Dunbar, 15 Moore street and Clarence H. Low, 89 Broad street, all of New York, N. Y. Principal office, Manhattan, New York. To deal in rubber.

THE SEATTLE TIRE CO., October 28 (Washington), $50,000. Incorporators: John L. Makeever, Mabel G. Hoiby and Fred Slater. Principal office, Seattle, Washington. To manufacture and deal in tires and tubes.

THE SELFEED PENCIL CORPORATION, December 21, 1925 (Delaware), capital stock $2,000,000, par value $5. Incorporators: Joseph P. Gilligan, 1593 Bedford avenue, Brooklyn; William Moore, 46 West 72nd street and Marian Wynn, 1210 Sheridan avenue, both of New York City, all of New York. Principal office with Arley B. Magee, Dover, Delaware. To manufacture, buy, sell, trade and deal in fountain pens.

STANDARD RUBBER CO., Inc., December 2, 1925 (New Jersey), $100,000. Incorporators: Homer D. Smith, Leonce L. Picot, and Eva H. Reda, all of 837 Broad street, Newark, New Jersey. Principal office, 837 Broad street, Newark, New Jersey. To manufacture and deal in rubber and gutta percha and all goods of which rubber is a component part.

THE VICTOR RUBBER CO., November 7 (Ohio), $150,000. Incorporators: J. B. Cartmell, president; H. H. Durr, vice-president and general manager; A. R. Hill, treasurer; George Cugley, secretary, and R. F. White, assistant secretary and treasurer. Principal office, Springfield, Ohio. To manufacture and sell tires and tubes.

IN A RECENT ARTICLE IN *Commerce Reports* ENTITLED "LIBERIA'S Commercial Development" mention is made of that country's rubber industry, while figures show that crude rubber exports during 1920 had a value of $29,990, the total for the first six months of 1925 rising to $21,112. It is stated that the climatic, labor, and soil conditions of Liberia are favorable for the cultivation of plantation rubber, and that with the necessary capital available a rapid expansion in export trade can be shown.

Rubber Chemist and Technologist

W. B. Wiegand is internationally known as a leading American rubber chemist and technologist. His reputation in this regard was well sustained by the success of his lecture on "Tendencies in Rubber Compounding" delivered September 14, 1925, before the Institution of the Rubber Industry in London.

Since his graduation from the University of Toronto in 1912 he has occupied executive positions with representative Canadian rubber manufacturing companies. He has been chief chemist, and assistant to the vice president of the Canadian Consolidated Rubber Co., Montreal, Canada; director and general manager of the Ames, Holden, McCready Co., Montreal, and more recently vice president and managing director of the Ames-Holden Tire & Rubber Co., Kitchener, Ontario, Canada.

W. B. Wiegand

Mr. Wiegand was chairman of the Rubber Division of the American Chemical Society during 1923. His contributions to the literature of rubber compounding and testing include the following titles: "Some Aspects of the Rubber Stress-Strain Cure," "Rubber Energy," "The Persistence of Calender Grain After Vulcanization," "Physical Testing Graphs," "The Resilient Energy Criterion as Applied to the Shape of the Rubber Stress-Strain Curve," 'On the More Complete Evaluation of the Pigment Reinforcement of Rubber," "Effect of Electricity on Streams of Water Drops," "On Some Rubber Compounding Tendencies."

In the first paper of this list, published in 1920, the author brought together for the first time the various properties of the compounding ingredients used in rubber and showed conclusively that the differences in the behavior of different pigments are referable to their degree of subdivision. Their reinforcing effect upon rubber mixing was traced to their average particle diameter. His subsequent papers were correspondingly valuable to the rubber technologist.

In his recent London lecture, Mr. Wiegand outlined advanced views as to the measurement and mechanism of reinforcement, introducing the idea of plane elasticity, also exhibiting the engineering possibilities of the Joule effect by applying it in the construction of rubber motors, both rotary and reciprocating. Working on the phenomena of higher concentrations of pigments, he has succeeded in producing a class of rubber compounds bridging the gap between soft rubber and ebonite, by the use of very high percentages of gas black. This development gives promise of far-reaching practical developments and to greatly extend the applications of rubber.

Mr. Wiegand's present association with the Binney & Smith Co., New York, N. Y., will greatly enlarge the possibilities of their research departments with resulting benefit to the rubber trade at home and abroad. He is a member of the editorial board of the French rubber trade journal, *Le Caoutchouc et la Gutta-Percha* of Paris, and in the interests of his New York connection will probably spend some portion of his time abroad.

AMERICAN IMPORTS OF CRUDE RUBBER AND RUBBER LATEX HAVE more than doubled in value for the first ten months of 1925 as compared with the similar period for 1924, the figures being respectively $308,377,183 and $139,282,414. The amount imported during the 1925 period totaled 713,570,673 pounds, the 1924 figure being 601,628,555 pounds.

The Rubber Trade in the East and South

The Rubber Exchange of New York, Inc., has leased the ground floor of the building at 31 South William street, New York, N. Y., the new location providing all facilities for the organization's requirements. About 100 founder memberships have been provided for, necessary committees are being appointed, and operations under the new conditions will soon begin.

The Callaway Mills, Inc., 345 Madison avenue, New York, N. Y., manufacturers of tire fabric, report the following changes in the personnel of their group of mills: Ira B. Grimes is in charge of the Unity Cotton Mills and the Elm City Cotton Mills, of LaGrange, Georgia, and also the Milstead Manufacturing Co., Conyers, Georgia; Boyd N. Ragsdale is manager and superintendent of the Unity Spinning Mills; Frank Asbury is superintendent in charge of operations, Hillside Cotton Mills, LaGrange, Georgia; and M. M. Trotter is superintendent of the Manchester Cotton Mills, Manchester, Georgia.

At a meeting of the textile division of the American Society of Mechanical Engineers, held in New York City during the early part of December, Edwin H. Marble, president of the Curtis & Marble Machine Co., Worcester, Massachusetts, was appointed a member of the executive committee.

Charles S. Leslie, broker in crude rubber and balata, has established offices at 25 Beaver street, New York, N. Y.

W. R. Flournoy has been appointed assistant sales manager of the Ajax Rubber Co., Inc., 218-222 West 57th street, New York, N. Y.

As successor to George H. Mayo, who has retired, Herbert E. Smith, general sales manager of the United States Rubber Co., 1790 Broadway, New York, N. Y., has entered upon his duties as second vice-president, in general charge of sales activities in connection with all commodities except tires.

The following have been elected officers of the Greater New York Tire Dealers' Association for the year 1926: George J. Burger, president; William Jude, vice president; L. Brown, secretary; and John F. Boh, treasurer. The organization has arranged for a dinner-dance to be held on the night of January 14, 1926, at the Hotel Pennsylvania, New York, N. Y.

The new officers of the National Tire Dealers' Association, 242 West 56th street, New York, N. Y., are as follows: Herbert A. Ruhnke, president; H. V. Eva, vice president; George J. Burger, secretary-treasurer.

Munn & Co., 233 Broadway, New York, N. Y., have, as patent attorneys, been associated for seventy-seven years with the *Scientific American*. Soon after the establishment of this periodical in 1845, the need was felt for organizing a separate service for inventors, and since that time Munn & Co. have been of assistance to many who are interested in inventions and patents.

The Brooklyn Shield & Rubber Co., 397 Sumner avenue, Brooklyn, New York, is building an addition to its factory which, when completed, will furnish 100,000 square feet of floor space, and permit a 100 per cent increase in business. The plant extension will be ready for occupancy about January 1.

John B. Tuttle, consulting chemist, has leased the laboratory of the Industrial Rubber Co., 133 Harris avenue, Long Island City, New York.

The Paramount Rubber Consolidated, Inc., has purchased the ball and toy departments of the Hodgman Rubber Co., Tuckahoe, N. Y.

Following the Chicago meeting of divisional managers of the Dunlop Tire & Rubber Co., Buffalo, N. Y., the eastern divisions—J. E. Schmidt, Atlanta; E. T. Richardson, Boston; W. A. Golden, Buffalo; A. L. Wendover, New York, and W. B. Ruston, Philadelphia,—conferred with E. H. Kidder, general sales manager, and J. C. Given, assistant general sales manager, in New York, where Dunlop's 1926 program was discussed.

A change of name from the Delbee Rubber & Supply Co., Inc., to the Delbee Rubber Co., Inc., is reported by this distributing organization, at 249 West Fayette street, Syracuse, New York, which handles the products of the Boston Woven Hose & Rubber Co. exclusively. The Delbee company has been especially busy during the last four months, the sales then being the largest in the history of the organization. J. L. Dunn is president and A. I. Rockett treasurer.

A considerable amount of new equipment is being installed at the factory of the Pennsylvania Rubber Company of America, Inc., Jeannette, Pennsylvania, and the production of tires has been greatly increased. The output of inner tubes has also been raised to 9,000 daily. W. C. Greenwalt is advertising manager.

The L. H. Gilmer Co., Tacony, Philadelphia, Pennsylvania, is installing new factory equipment for the manufacture of its rubber belts, in order that all processes of production may be carried forward at its own plant. In addition to automobile fan belts, the company makes a variety of both rubber and fabric belts, specializing in the manufacture of small woven endless belts for high-speed machine drives. Ludwell H. Gilmer is president of the organization, and John S. Kraus is vice president and general manager.

Elmer A. Reid has been appointed assistant to the general manager of the Lee Tire & Rubber Co., Conshohocken, Pennsylvania, and will also assist in the management of the Republic plant at Youngstown, Ohio. Mr. Reid is a well known tire engineer.

The Parkland Tire & Rubber Co., Twenty-sixth and Howard streets, Louisville, Kentucky, is operating on a schedule of about 500 tires daily, with a possible maximum of 1,000 tires before the year is far advanced. The organization is also considering the manufacture of a full line of "Parkland-Panther" balloon casings as well as certain types of heavy duty bus and truck tires. John D. Cary is vice-president.

The Kelly-Springfield Tire Co., 250 West 57th street, New York, N. Y., is finding it necessary to establish new branches in various parts of the country, one of these being at El Paso, Texas.

The Bakrow-Leatherow Balloon Co., Inc., Hill street, Louisville, Kentucky, is successor to the Howe-Baumann Balloon Co., Newark, New Jersey, and also formerly carried on business under the name of Richard D. Bakrow & Son. The two first-mentioned organizations have consolidated their interests, and are engaged in the manufacture of toy balloons. Walter J. Leatherow is secretary and general manager.

The production schedule of The Cord Tire Corporation, Chester, West Virginia, has been increased by about 35 per cent. The company is extending its sales, and several new territories are being developed.

The production of Dixie Clay has been facilitated by a power line extension from the Muscle Shoals power plant, and the establishment of a new freight station known as McNamee, South Carolina. Dixie Clay is now shipped either from that station or Langley. A third grinding and drying unit will be completed and ready for operation by the spring of 1926.

The Goodyear Tire & Rubber Co., Akron, Ohio, will open a new branch building at Memphis, Tennessee, during January. Construction is of concrete blocks, two stories high. It has 20,000 square feet of office space with improved display and storage facilities.

Russell Firestone, son of Harvey S. Firestone, is in Florida on a business trip for the Firestone Tire & Rubber Co., Akron, Ohio. He visited the Miami and Jacksonville branches last month.

Dan F. White has resigned as branch manager of the Jacksonville, Florida, branch of the Firestone Tire & Rubber Co. He has been with the company for sixteen years.

The Rubber Trade in New Jersey

New Jersey rubber manufacturers report good seasonal activity in all rubber divisions, and the volume of orders already booked indicate a prosperous winter season. Both mechanicals and tires are in good production while garden hose is being manufactured in volume for spring delivery.

The Thermoid Rubber Co., Trenton, New Jersey, reports all departments busy and a large demand for brake lining. The company has operated for a long time without reduction in working hours or laying off of help.

Garden and fire hose production is keeping Whitehead Brothers, Trenton, New Jersey, quite busy. The company reports a large increase in orders for these goods.

The Essex Rubber Co., Trenton, New Jersey, reports a prosperous year and many orders for soles and heels.

Frank Y. Stewart, for many years associated with The B. F. Goodrich Co. at Akron and New York and with the United States Rubber Co., at New York and Baltimore, has been appointed sales director of the Voorhees Rubber Manufacturing Co., Jersey City, New Jersey.

The Pocono Rubber Cloth Co., Trenton, New Jersey, reports a prosperous season and that 1925 business was the largest in its history. The concern has built up a large trade in automobile cloth.

Forty superintendents and foremen of the Essex Rubber Co., Trenton, New Jersey, recently held their annual dinner at the Stacy-Trent Hotel, Trenton. Clifford H. Oakley, president of the company, gave a talk, and later, business conditions were informally discussed.

The Spartan Rubber Co., Yardville, New Jersey, has been sold to the Corporation Finance Co., a Delaware corporation, which will manufacture tires and tubes.

The Top Notchers' Club, composed of salesmen and branch managers of the Michelin Tire Co., Milltown, New Jersey, gave a minstrel show in the Community House at Milltown, last month. The annual dinner was held in the Waldorf-Astoria Hotel, New York, for the members as guests of J. Hauvette Michelin. A theatre party followed the banquet.

Colonel Arthur F. Foran, an official of the Dural Rubber Co., Flemington, New Jersey, has been reappointed by President Coolidge as Comptroller of Customs, with headquarters in New York City.

Jacob Holcombe, Jr., has been made head of the rubber corset department of the Lambertville Rubber Co., Lambertville, New Jersey.

Walther H. Grote, formerly associated with C. Kenyon Co., Brooklyn, N. Y., has taken over the factory management of the Phelps Tire & Rubber Co., Garfield, New Jersey. Mr. Grote is well known in the trade as an experienced tire production man.

The Rubber Trade in Massachusetts

Production schedules of Massachusetts rubber manufacturers have continued high throughout December, and will not be interrupted to any extent by the end of the year inventory as most of the manufacturers end their fiscal years April 1.

Owing to the fact that Christmas and New Year's both fall on Friday this year, many mills closed down on the following days to avoid the inevitable high absentee rate after a holiday, especially when only a half day of production was involved. Reclaimers continued to operate on these dates, however, so acute is the production crisis in that branch of the industry.

Footwear production is unusually large; Hood Rubber is carrying an 80,000 pair per day schedule; Firestone-Apsley 25,000; Converse 16,000; Cambridge 15,000; and the United States plants are operating on a similar basis. Snow and wet weather in parts of New England and very severe storms in the West have started the goods moving in fair volume. Boston newspapers have been carrying considerable department store advertising which feature overshoes as an acceptable Christmas gift. Automatic fastener gaiters have been selling well in the high class shops and sateen cloth four buckles in the chain and department stores.

Tire and mechanical lines are running well ahead of last year, and report exceptional business for this season.

New price lists on rubber footwear are issued January 1, and it is reported that a substantial increase will be put in effect, as rubber footwear prices have not changed since a year ago when a slight advance was made after they had remained stationary for several years.

Rubber heel and sole business has held up exceptionally well. An advance of 25 per cent on rubber soles was announced December 15, which brings the price of rubber soles in the 9 iron class in direct competition with the cheaper grades of leather. Manufacturers are not looking for any loss of business on this account, however, as leather sole prices are very firm, and producers will not accept future business on them. Then again, certain lines of footwear such as work shoes, children's play-shoes, and boy scout shoes have carried rubber soles for so long that any attempt to reinstate leather would meet with consumer buying resistance. Heel prices are due for an advance January 1, particularly the manufacturers' brands, which have been out of line with crude rubber and production costs for some time.

Work has begun on a new four-story office building at the Hood Rubber Co. plant, Watertown, Massachusetts. When completed this structure will accommodate the hospital, technical service, and many factory department offices, which now occupy space needed for production in footwear.

Edward A. Pope, of the Cleveland Liner & Manufacturing Co., Cleveland, Ohio, attended the Thomas C. Wales anniversary dinner in Boston.

Liquidation of the Fellsway Rubber Co., Medford, Massachusetts, formerly manufacturers of Travelite soles and heels, has been completed. Part of the Medford factory has been rented to the Emery Rubber Heel Co.

Dr. Robert Caswell, formerly with W. B. Pratt, Inc., Newtonville, Massachusetts, consulting engineers and chemists, is now in the development department of the Hood Rubber Co., Watertown, Massachusetts.

Seward G. Byam, formerly general superintendent of the Plymouth Rubber Co., Canton, Massachusetts, is now assistant manager of the Du Pont Fabricord Co., Fairchild, Connecticut. J. C. Roberts, formerly a chemist at Plymouth, has joined the technical service staff of the Hood Rubber Co. in the heel and sole division.

Roscoe M. Gage has resigned his duties with the Vulcan Rubber Co., Erie, Pennsylvania, and is now a member of the technical staff of the Hood Rubber Co., Watertown, Massachusetts. Mr. Gage has been associated with the rubber industry for the past fourteen years, and has held positions of responsibility with several well-known organizations.

Archer Strauss Rubber Co., Framingham, Massachusetts, has purchased the business, with the exception of the ball and toy departments, of the Hodgman Rubber Co., Tuckahoe, N. Y. Plant extensions are being made at Framingham where Archer Strauss and Hodgman products will be manufactured.

Theodore G. Sullivan, Jr., formerly chemical engineer with the Clapp Products Co., Boston, Massachusetts, is covering the New England territory for the Wishnick-Tumpeer Chemical Co., dealers in compounding ingredients.

Interest in bowling was never greater in Boston rubber circles than this winter. The American Rubber Co., Cambridge, Massachusetts, bowls at the Congress Alleys weekly, and is represented by seven teams. The Revere Rubber Co. has a league represented by eight teams, and the Hood Rubber Co. league boasts of twelve teams. Competition is stimulated by the offer of a cup by Judge

A. D. Bosson, one of the directors, which must be won three years in succession to be retained permanently.

Eugene H. Clapp, President of the E. H. Clapp Rubber Co., Boston, Massachusetts, is Chairman of the Greens Committee, Tedesco Country Club, Swampscott, Massachusetts, where a new 18 hole course is being constructed. Much of the supervision will be handled by Mr. Clapp who is one of the best informed men on golf course construction in the country.

The Rubber Trade in Ohio

New high records in production, sales and profits were set by the rubber and tire industry in Ohio during 1925, and while rubber shortage looms as a possible source of trouble, leaders in the industry are optimistic over prospects for 1926. Companies in the Akron district had total sales of approximately $500,000,000 for 1925, and profits of $50,000,000, compared with sales of nearly $388,000,000 in 1924 and profits of $35,580,000. Most tire and rubber factories have enjoyed unprecedented prosperity. They have experienced healthy sales increases and have reduced manufacturing costs, thereby making larger profits. The most serious problem confronting rubber manufacturers and retail dealers alike in 1926 is that of increased capital, necessary to finance their business, owing to the extraordinary high cost of crude rubber as compared to a year ago.

In a letter to the tire trade, Harvey S. Firestone, president of the Firestone Tire & Rubber Co., Akron, Ohio, states that America has used approximately 400,000 tons of crude rubber in 1925. At the price of rubber prevailing a year ago, which was 36 cents, our total rubber bill would be $313,600,000. The same amount of rubber consumed during 1926, calculated at $1.05 a pound, he points out, will cost America $940,800,000, or an increase of over 200 per cent. One each of ten popular sized tires and tubes cost the dealer $213.70 a year ago, while the same order will cost him $341.60 today, or 60 per cent more. It is estimated that tire consumption for 1925 will reach 53,000,000, with every indication that 1926 will see a demand for 60,000,000.

While tire sales of The B. F. Goodrich Co., Akron, Ohio, have been somewhat lower in the past two months, business in mechanicals and footwear has been better in the last half of 1925 than in any similar period in the company's history. Demand for the "Zipper" boot which has grown very popular is far in excess of production and factory operations are being increased to catch up with orders. Total earnings of the company for the full year of 1925 are estimated at close to $20 a share on the common stock, or in the neighborhood of $14,000,000. The Akron factory is manufacturing approximately 28,000 pairs of rubber boots and shoes a day.

The Goodyear Tire & Rubber Co., Akron, Ohio, has increased tire output and expects a peak production of 40,000 casings a day during January. Net income of around $13 a share on the common stock, or $21,000,000, is estimated for 1925. For the first six months of 1925 the company reported earnings of $11,394,267. New financing recently announced by Goodyear consisted of the sale of $15,000,000, 5 per cent notes at 99¼, for three years.

Simplification of automobile tire sizes is a problem which can only be solved with the cooperation of car manufacturers, in the opinion of William O'Neil, president of the General Tire & Rubber Co., Akron, Ohio. Car makers create most of the tire sizes today, the tire manufacturer merely turning out his product as a part of a car, the weight and engineering peculiarities already being determined. "Abolition of a number of tire sizes now would bring hardship to hundreds of thousands of car owners," Mr. O'Neil states. "We would welcome a time, however, when car manufacturers' engineers would arrive at some understanding about mutual standards, and then consult tire manufacturers about size and strength, instead of merely the price of the tires."

An increase of 400 per cent in new accounts during 1925 is reported by President Floyd C. Snyder, of the American Rubber & Tire Co., Akron, Ohio. Further expansion of business is looked for in the new year. The Akron plant is now operating close to capacity, after being shut down during the late summer and early fall about four months. Approximately 500 tires and 800 tubes a day are being manufactured. Completion of a $1,000,000 financing program has provided the company with ample working capital and placed it in a strong financial position. All current debts have been liquidated, it is reported. J. T. Johnson is vice-president of the concern.

The General Tire & Rubber Co., Akron, Ohio, is constructing two additions to its factory which, when completed, will increase the plant capacity by one-half. During the past three years by means of various extensions and enlargements the size of the factory has been doubled. H. S. Quine is publicity manager.

The Seiberling Rubber Co., Akron, Ohio, has paid off all deferred dividends on the 8 per cent preferred stock, a total of 26 per cent being paid during the year. Sales for 1925 were approximately $12,000,000, and officials are preparing for a business of $18,000,000 in 1926. A $200,000 factory addition has just been completed.

In order to care for increasing business the Firestone Tire & Rubber Co., Akron, Ohio, has issued additional preferred stock to the amount of $10,000,000 and has invested over $3,500,000 in new plants and equipment. Facilities have also been increased for securing rubber direct from the plantations in the Malay Peninsula, Sumatra, Dutch Borneo, Mexico and Liberia.

A 33 by 3½ eight ply special tire, with a dual grip, was recently put on the market by the General Tire & Rubber Co., Akron, Ohio. It is said to be particularly adapted for roads where efficient anti-skid tires are needed.

The Miller Rubber Co., Akron, Ohio, has designed a new line of five to ten inch bus tires with a more flexible carcass and more carefully balanced tread and carcass combination.

T. G. Graham, for several years factory manager and secretary of the Mason Tire & Rubber Co., Kent, Ohio, is production superintendent in the tire division of The B. F. Goodrich Co., Akron, Ohio.

Through the construction of a second floor for its warehouse building, The Akron Rubber Reclaiming Co., Barberton, Ohio, will have an additional floor space of approximately 11,000 square feet. The company also intends to triple its present plant equipment by building two more units of ten to twelve ton capacity each. Approximately 325 persons will ultimately be employed. C. E. Bishop is vice-president and factory manager.

A schedule of about 425 tires a day is being maintained by The Triangle Tire & Rubber Co., Canton, Ohio, while prospects throughout the winter are very favorable. The organization has distributers in almost thirty states.

As successor to F. D. Scherl, who died October 12, F. A. Geier has entered upon his duties as president of The Cincinnati Rubber Manufacturing Co., Cincinnati, Ohio. J. F. Joseph, formerly associated with the Goodrich organization, has also been recently appointed vice-president and general manager of the Cincinnati organization.

The Sun Rubber Co., Barberton, Ohio, representing the merged assets of the Marlanite Co., Barberton, and the Sumatra Rubber Co., formerly of Salem, Ohio, has practically trebled its business during the past ten months, and enlarged its plant and equipment. The output includes druggists' sundries, molded and sponge rubber goods. Officers of the company are: J. T. McLane, president; T. W. Smith, Jr., vice-president and sales manager; M. S. Lower, second vice-president, secretary and general manager; and E. B. Billick, treasurer.

President William O'Neil announced at the annual meeting of the General Tire & Rubber Co., Akron, Ohio, that sales for the year ended November 30 totalled $18,700,000, an increase of 50

per cent over 1924. Earnings showed a similar gain over the previous year. A Christmas bonus in the form of an extra six per cent dividend on the common stock accompanied letters mailed stockholders announcing the meeting. Regular dividends on common have been on an 8 per cent basis which brings the total disbursement up to 14 per cent. There will be no new financing to provide additional working capital, made necessary by the high price of crude rubber and other expenses. Sufficient funds are in the treasury to take care of any emergency that might arise, Mr. O'Neil stated.

Goodrich Akron Warehouse Completed

The new warehouse erected by The B. F. Goodrich Rubber Co., Akron, Ohio, is a six-story building, 440 by 220 feet, and containing eleven and a half acres of floor space. The structure, said to be one of the largest single building units in the state of Ohio, will be used for footwear storage, and will be opened about the first of January. The equipment to be used in handling goods is

The New Goodrich-Akron Warehouse

thoroughly modern, and a unique conveying system, largely developed by Goodrich engineers, is one of the interesting features of this new plant addition.

Miller Sundry Sales Convention

The thirty-third annual convention of Miller Rubber Co's. sundry sale division was held in Akron, December 15, 16, 17 and 18. There was a dinner at Young's Hotel on the opening night when informal talks were made by W. S. Davison, manager of the sundry sales division; C. R. Wetsel, western district manager, tire sales department; LeRoy Wagner, of San Francisco, and N. B. Quick, of New York, both branch managers.

The salesmen were addressed by Jacob Pfeiffer, president; William F. Pfeiffer, general manager; R. T. Griffith, superintendent; F. C. Millhoff, general sales manager; J. M. Zang, credit manager; L. H. Mercer, assistant manager of sundry sales. Trips were made through the factory where salesmen were able to view the various processes entering into the goods they sell.

The following salesmen and branch managers were on the program for short talks: H. W. Holmes, Detroit; O. L. Cummins, Philadelphia; J. J. Dunn, Chicago; H. M. Georgi, San Antonio; R. W. Stevens, Baltimore; J. Ben Martin, Jacksonville; R. K. McFee, Pittsburgh; and C. O. Buckmaster, Akron. A survey of the year closed showed a very considerable increase in sales and assures that the year ahead will be even more prosperous.

Firestone Plantations Fairly Launched

No more Akron or American expeditions to Liberia will be made until a basic organization is firmly established there, according to Harvey S. Firestone, Jr., secretary of the Firestone Plantation Co., Akron, Ohio, who has returned from a seven weeks' stay in England, where he established headquarters in London for the new rubber growing subsidiary company of the Firestone Tire & Rubber Co.

"To send men to Liberia now, when there are no accommodations, would be a handicap," said Mr. Firestone. "We have Donald Ross, an experienced Scotch rubber grower in charge of the plantations, and there will be no more men sent over until he is able to take care of them.

"Development of the Firestone $1,000,000 rubber growing project in Liberia is not a romantic adventure but a prosaic business undertaking which will require years of hard work to realize," he said.

While in England Mr. Firestone hired a number of experienced English, Scotch and Dutch rubber planters who will have charge of the various plantation units in Liberia, and instruct the Akron men who will have charge of other units later on.

Tires are now on the market made with rubber from the Mt. Barclay plantation, located 15 miles inland from Monrovia, which has been in operation a year, but it will be several years before rubber can be obtained from the new plantation units.

Midwestern Notes

The Gessert Tire Co., one of the Corduroy Tire Stores, which handle goods manufactured by the Corduroy Tire Co., Grand Rapids, Michigan, maintains two retail establishments in Milwaukee, Wisconsin, one at 667 Mitchell street, and the other at the corner of 26th street and North avenue. Tires are being sold on the credit plan by E. E. Gessert, general manager.

The Golf Ball Die Co., 411 Empire Building, Detroit, Michigan, manufactures and recovers golf balls, besides producing each day approximately 1,000 "Universal" recovering and repairing outfits. Golf ball dies also represent part of the company's specialties. Executives include: C. A. Notman, president and general manager; and C. E. Collet, vice-president and general sales manager.

Early in 1926 the Corduroy Tire Co., Grand Rapids, Michigan, will begin production in its large new factory addition which will double the present plant output, but necessitates a 24-hour day schedule. Production now includes a full line of "Rim-Protection" tubes, both grey and red, and four types of cord tires.

Unger Bros., 729 Sycamore street, Waterloo, Iowa, carry on a wholesale and retail tire business, as well as handling automobile parts and supplies.

The Servus Rubber Co., Rock Island, Illinois, has begun the construction of a three-story addition to its plant, the new building to measure 132 by 84 feet. With increased facilities, the company will be able to produce 12,000 pairs of footwear daily. Judson J. Adams is president.

New branches established in the Midwest by the Kelly-Springfield Tire Co., 250 West 57th street, New York, N. Y., are as follows: Indianapolis, Indiana; Oklahoma City, Oklahoma; Butte, Montana; Fargo, North Dakota; and Duluth, Minnesota.

A new distributing station for the handling of rubber and canvas footwear has been established at 320 West 2nd South street, Salt Lake City, Utah, by the Hood Rubber Products Co., Watertown, Massachusetts.

The Middle States Rubber Corporation, 600-608 Cottage street, Independence, Missouri, is operating the plant formerly used by the Independent Airless Tire Co., and is manufacturing tire repair gums, rubber cements, automobile tires of a new design, and various mechanical rubber goods, including small molded specialties and tubing. The officers are: D. L. Rozelle, president; R. E.

May, vice-president; and J. F. Tallant, secretary and treasurer.

Dunlop's advertising and selling plans for 1926 were unfolded at a conference in Chicago, Illinois, December 8 to 10, when the divisional managers of the Midwest—L. F. Desmond, Chicago; T. W. Decker, Cleveland; R. L. Marshall, Dallas; R. W. Peterson, Kansas City, and C. E. Neumann, Minneapolis—met with E. H. Kidder, general sales manager, and J. C. Given, assistant general sales manager, of the Dunlop Tire & Rubber Co., Buffalo, N. Y.

Walter T. Scott, for many years a member of the sales force of the Lambertville Rubber Co., Lambertville, New Jersey, has been appointed manager of the Chicago branch.

The Rubber Trade on the Pacific Coast

The rubber mills on the Pacific Coast which were unaffected by the rise in rubber during the forepart of 1925 have all been very busy and have offset in gross sales the reduced profit occasioned by increased cost of rubber. The factory representatives say that their chief trouble is not in getting orders, but in getting goods; however, relief in that direction is soon expected. Higher tire prices have been a boon to vulcanizers and makers of repair stock and equipment. Increased activity in the paper market has resulted in the placing of more orders for rubber rolls for paper mills. The oil fields have suddenly taken on new life and belting and other supplies are in lively demand. The rubber footwear trade alone is quiet on account of scarcity of rain, except in the extreme northwest. The market for rubber-covered wire is broadening, but competition is keen.

The Huntington Rubber Mills, Portland, Oregon, has just completed the best year in its history, the business being largely in soles and heels, with a growing volume of specialty work. The soles and heels are largely marketed on the Pacific Coast, but sales of the Huntington tan sole are made as far as the Atlantic seaboard, through jobbers and factories. President Harry Huntington sees an excellent business prospect for 1926, even with the high price of crude rubber.

The Pioneer Rubber Mills, San Francisco, California, despite the rubber increase, reports 1925 as the banner year for the company. The mills at Pittsburgh, Contra Costa County, California, have been running eighteen hours a day on hose, belting, packing, heel, battery jar, and general mechanicals. President George S. Towne spent considerable time in the latter part of December in the Southern California field.

The Chanslor-Lyon Co.'s Spokane branch has been closed and its manager, R. A. Flynn, has been made assistant manager of the Portland branch. The Chanslor-Lyon Co. is not only one of the largest automobile accessory dealers on the Coast, but also controls and distributes the entire tire and tube output of the King Tire & Rubber Co. (formerly the Sturges Co.), Oakland, California.

Maurice Switzer, vice-president, and T. S. Lindsey, general sales manager, of the Kelly-Springfield Tire Co., New York, N. Y., attended the opening on December 1 of the company's new $250,000 factory branch at W. 447 Havermale avenue, Spokane, Washington, and of which J. R. Bennyhoff, formerly of the San Francisco headquarters, is manager. The two officials from New York also assisted recently at the opening of a Kelly-Springfield branch in Butte, Montana.

"Back to normal and forging ahead," is the report of the Firestone factory branch management which, since the big fire in Seattle in October, has been utilizing warerooms at Tenth avenue and East Union street as temporary headquarters. The concern was formerly at 1520 Eleventh avenue. E. R. Wood is in charge.

The Nemer Tire Construction Co., 1350 N. Western avenue, Los Angeles, California, expects to have in a short time the largest and best equipped tire repair shop on the Coast. It has been using ten tire vulcanizing molds, and thirty more have been ordered from the Bacon mold making concern in Oakland. In addition a completely new steam plant will be installed. The Nemer company has just been appointed distributers of Norwalk tires.

Production of the Goodyear Tire & Rubber Co., Los Angeles, California, late in December averaged 6,500 tires, and 8,000 tubes a day. The million-dollar addition to the works is progressing rapidly and will be ready for occupancy in April. Vice-President and General Manager A. F. Osterloh, having returned from the parent Goodyear plant in Akron, has been spending considerable time recently in the San Francisco field. Hugh Allen, Goodyear publicity manager, from Akron, was a recent visitor at the Los Angeles plant.

J. P. Cahoon, manager of the Los Angeles, California, factory branch of the Kelly-Springfield Tire Co., reports a marked increase in business for 1925 over 1924, and states that for 1926 the sales force will be considerably increased.

An increase of over 35 per cent in gross sales was scored in 1925 over 1924 in the southwest territory for The B. F. Goodrich Co., according to F. L. Hockensmith, branch manager with headquarters in Los Angeles, California; and the 1926 prospects are very encouraging.

The Los Angeles fire department recently received for general use from the Pioneer Rubber Mills, San Francisco, California, 25,000 feet of 2½-inch extra quality cotton jacketed firehose; and 10,000 feet of 3½-inch hose of the same kind for use on the new fireboat in the harbor of Los Angeles.

The Lancaster Tire & Rubber Co., Lancaster, Ohio, has made arrangements for the sale and distribution of its tires in three important Pacific Coast centers, these new establishments including the Superior Tire & Repair Co., 1650 Pine street, San Francisco, California; the Standring Tire Co., Seattle, Washington; and the Lancaster Tire & Service Station, 39th and Gladstone streets, Portland, Oregon. Warehouse stocks will also be carried in Seattle and San Francisco. O. H. Williams is vice-president and general manager of The Lancaster Tire & Rubber Co.

The Triangle Tire & Rubber Co., Canton, Ohio, has made arrangements with the Ralphs-Pugh Co., Inc., San Francisco, California, whereby the Triangle organization will be represented in the three states of California, Oregon, and Washington.

The Rubber Products Company of America, 817 W. M. Garland Building, Los Angeles, California, has licensed, on a royalty basis, certain patents for devulcanizing rubber, and factory operations are to begin in a short time. W. H. Yetman is general manager.

The Rubber Trade in Canada

Rumors are current in Canada of a still further advance on general rubber goods, including tires, belting and hose. The rubber market at present is exceptionally strong, and the tendency is upward. Manufacturers who were holding out expecting a drop in prices, which did not materialize, have been forced to buy at the higher level so it is believed that there will be some strengthening in general rubber goods prices.

One healthy sign in the present rubber footwear situation was the apparent tendency of the retailers to anticipate their requirements to a greater extent, and dealers are ordering ahead in reasonable quantity. A retailer who does not place 50 to 60 per cent of his requirements in advance is not fair to himself, his customers, or his manufacturer. When snow falls unexpectedly there is a great demand for light rubbers, dealers' shelves are cleared and the manufacturers have had a hard time filling repeat orders. The retail trade should always keep in mind that it is a one season business and order ahead.

In a recent survey of the shoe repairers of Toronto the question was asked "Is the repairing of goloshes a worth-while business?" It was found that the "yeas" were considerably more than the "nays." Some repairers go so far as to run attractive newspaper

copy quoting prices on rebuilt goloshes with entire new bottoms.

In a recent trade statement issued by the Canadian Government at Ottawa, Ontario, it was pointed out that men are wearing more braces and suspenders. These, to the value of $33,303, were imported: in the previous September the figure was $5,372. In the six month period importations of these supports increased from $34,647 in 1924 to $40,547 in 1925.

Canadian corset manufacturers use a great deal of hand knitted elastic, and although this fabric is produced only in England, very little is used by English manufacturers, the greater part being shipped to the United States. Much of that used in Canada is manufactured by a branch of an English firm resident in Toronto, and on hundred-year-old-machines that are operated by men who have grown up with the industry.

A dispatch from Vancouver, British Columbia, says "Complete reorganization of the Gregory Tire & Rubber Co., Port Coquitlam, has been decided on and the first step was taken on December 12 by court action, seeking the appointment of a receiver."

Employes of the Montreal Branch of the Goodyear Tire & Rubber Co. of Canada, Ltd., recently had a get-together dinner at the Windsor Hotel. The chair was occupied by W. J. McNally, local manager, and the guest of the evening was D. J. McCarthy, assistant sales manager from the head office.

P. B. Glickman, formerly of Westmount, Quebec, died recently at his residence in Los Angeles, California, after a long illness. Until a year and a half ago he was interested in the National Rubber Co., Ltd., Montreal.

After serving with the Dominion Rubber System (Pacific) Ltd., for twenty-five years, R. E. Jamieson, well known and active business man in Vancouver, British Columbia, has retired from the company. His place at the head of the company in Vancouver has been taken by H. A. Wells, formerly assistant treasurer of the Canadian Consolidated Rubber Co., Ltd., in Montreal.

E. B. Ryckman, K. C. M. P. and President of the Dunlop Tire & Rubber Goods Co., Ltd., Toronto, was elected member of Parliament for East Toronto, at the recent federal election.

J. T. Crowder, of Vancouver, British Columbia, president of the Dominion Retail Merchants' Association, has advanced a plan to standardize tire prices throughout Canada. The proposal is for manufacturers to establish the selling price on all branded and trade marked goods of advertised lines, instead of leaving it to the retailer. A meeting will be held by tire sales managers and retailers at Toronto when plans will be made for a campaign in favor of the proposal throughout Ontario.

W. C. Thompson, traffic manager, Goodyear Tire & Rubber Co. of Canada, Ltd., New Toronto, has been elected president of the Canadian Industrial Traffic League.

Report of Canadian Goodyear

A very satisfactory financial report was presented by the Goodyear Tire & Rubber Company of Canada, Ltd., at the general meeting of shareholders held recently at New Toronto, Ontario. Results for the twelve months' period under review show an improvement to have been made in all departments. Profits for the year showed an increase of close to a quarter million, and after meeting all expenses, taxes, and depreciation, reserve was equal to 18.72 per cent on the 7 per cent preferred stock, compared with 14.02 in 1924 and 18.34 in 1923. The liquid position for the third year in succession shows a substantial improvement. Working capital has been increased by approximately $330,000, and at the close of the year the company had nearly a million in cash on hand.

Canadian Goodrich Activities

The Canadian Goodrich Co., Ltd., has decided to operate all its branches in this country under the name of Canadian Goodrich Co., Ltd., embracing both manufacturing and selling departments. The sales corporations, however, will continue but will be coordinated with the manufacturing interests at Kitchener, Ontario. The Montreal branch and salesroom of the company has been removed to 36 St. Genevieve street, where there are better facilities for handling increased business and carrying a larger stock.

The main offices of the Canadian Goodrich Co., Ltd., are now located in Kitchener, Ontario, and several important changes have recently taken place in its executive personnel. Executives at present include: T. B. Tomkinson, vice-president and general manager; and A. Koehler, general sales manager.

District managers are: F. H. Stafford, Montreal; R. A. Gunther, Toronto; A. A. Frew, Winnipeg; G. R. Donaldson, Vancouver.

At the Kitchener plant rubber footwear is now being manufactured, and there is a good market for Hi-Press footwear and Zipper boots.

TIRE INSPECTING MACHINE

The machine shown herewith has been specially designed for inspecting tires of large dimensions or heavy construction, such as balloon and giant pneumatic truck tires.

Robertson Tire Spreader

The tires are supported top and bottom on rollers, the top roller having spring adjustment for all sizes. The hands of the operator are free to turn the tire. Five pulling positions are afforded by the slotted side levers whereby the fingers are made adjustable to small or large tires. The bottom of the casing is pushed upward while being opened, thus stretching the cords and revealing the trouble. The inside of the casing is free of all obstructions for the use of flexible shaft buffers or for making repairs. For balloon tire repairs a segment plate is used for spreading and pushing up the tires to make it easy to cut out cords, buffing, etc.

The range of usefulness of this machine for the tire repairman is extensive. For the factory inspector and tire adjuster the machine is a quick and easily used tool.—Rockford Tire & Vulcanizing Co., 223 North Church street, Rockford, Illinois.

DUST SEAL FOR HANGER BOXES

There are many dusty locations about rubber manufacturing and reclaiming plants where dust seals for hanger boxes and pillow blocks would be valuable. An extra dust seal of effective design is merely an extension on the self locking collar enclosing the end of the box and fitting over the corners to keep the dirt from working down. The corners of the box are cut down and have a ridge so that the seal closes down snugly around them. The seal revolves with the collar and shaft and tends to throw the dirt out by centrifugal force, making an absolutely dust proof enclosure.—The Fafnir Bearing Co., New Britain, Connecticut.

The Obituary Record

Dean of Rubber Shoe Superintendents

Erskine F. Bickford, for many years highly esteemed in manufacturing, religious and philanthropic circles of Malden, Massachusetts, died at his late residence in that city December 4, 1925, after a prolonged illness. He was born in Woodstock, Connecticut, June 4, 1840, and was a carpenter in early manhood. At the outbreak of the Civil War he enlisted in the 18th Connecticut regiment with which unit he served for 3 years until wounded, captured and confined in the hospital prison at Richmond, Virginia. Later he served as a hospital steward in the Union Army.

Erskine F. Bickford

Mr. Bickford entered the employ of the Boston Rubber Shoe Co. in 1865, the company being then so small that with one assistant he handled its entire office business. His connection with this company, founded by Hon. E. S. Converse, was practically life long. In 1871 Mr. Bickford was appointed superintendent of the company's plant in Malden which post he filled nearly 30 years, becoming in that period general superintendent of the factories in Malden and Melrose whose combined output reached 50,000 pairs of rubber footwear daily. This position he held until 1898 when he was succeeded by the late John W. K. Robson.

For many years Mr. Bickford was closely identified with the religious and philanthropic interests of Malden. He was chairman of the Executive Board of the First Baptist Church and a founder of the Malden Hospital, and the Industrial Aid Society. For several years he was president of the latter organization. He also served as trustee and president of the Malden Savings Bank, and chairman of the Malden School Committee. He leaves a daughter, Mrs. Edwin L. Phipps, and two grandchildren.

Pacific Coast Pioneer Rubber Man

In the passing, on December 14, of George W. Eno, of Los Angeles, California, the Coast lost one of its pioneer rubber men. He was the founder of the George W. Eno Rubber Co., now the Eno Rubber Corporation, Los Angeles, having begun business sixteen years ago in a 15-foot-wide storeroom on South Main street. Mr. Eno suffered a nervous breakdown four years ago and retired from active business, spending much time in traveling and with apparent benefit. A few weeks ago he suffered a relapse and failed steadily. Mr. Eno, who came from the well-known New York Eno family, noted in railroad and banking circles a generation ago, was a cousin of Gifford Pinchot. His mother, wife, two sisters, and one brother survive him.

Fisk's Assistant Sales Manager

George H. Hamilton, assistant sales manager of The Fisk Rubber Co., Chicopee Falls, Massachusetts, died at his home in Springfield, Massachusetts, on December 21, 1925. An illustrated obituary of Mr. Hamilton, will be published in our next issue.

AMERICAN EXPORTS OF SOLID TIRES FOR AUTOMOBILES AND MOTOR trucks reached a total value for the first ten months of 1925 of $2,529,168, as compared with $2,320,471, the value for the corresponding period of 1924. The number of tires shipped during the ten months of 1925 was 93,653, as against 89,128 for 1924.

Legal Decisions

Customs Appraisers

No. 50405. Protest 990847-65132, etc., of Bernard, Judae & Co. et al. (Chicago). Rubber balls classified as toys at 70 per cent ad valorem under paragraph 1414, tariff act of 1922, are claimed dutiable under the eo nomine provision for balls in paragraph 1402 at 30 per cent. Opinion by Sullivan, G. A. On the authority of G. A. 8807 (T. D. 40210), affirmed in United States *v.* Stewart (12 Ct. Cust. Appls. 533; T. D. 40734), the rubber balls in question were held dutiable under paragraph 1402, as claimed.—*Treasury Decisions*, Volume 48, No. 20, page 10.

No. 50421. Protest 102111—G of Louis Wolf & Co. (New York). The question here is whether colored rubber balls are dutiable as toys at 70 per cent ad valorem under paragraph 1414, tariff act of 1922, or under the provision for balls in paragraph 1402 at 30 per cent. Opinion by Sullivan, G. A. On the authority of United States *v.* Stewart (12 Ct. Cust. Appls. 533; T. D. 40734), affirming G. A. 8807 (T. D. 40210), the rubber balls in question were held dutiable as claimed under paragraph 1402.—*Treasury Decisions*, Volume 48, No. 20, page 13.

No. 50442. Protest 74808—G of F. W. Woolworth Co. (Boston). Rubber balls classified as toys at 70 per cent ad valorem under paragraph 1414, tariff act of 1922, are claimed dutiable at 30 per cent under paragraph 1402. Opinion by Sullivan, G. A. In accordance with stipulation of counsel and on the authority of United States *v.* Stewart (12 Ct. Cust. Appls. 533; T. D. 40734) rubber balls were held dutiable under paragraph 1402 as claimed.—*Treasury Decisions*, Volume 48, No. 21, page 35.

No. 50532. Protest 109074—G of B. Illfelder & Co. (New York). Rubber balls classified as toys at 70 per cent ad valorem under paragraph 1414, tariff act of 1922, are claimed dutiable at 30 per cent under paragraph 1402. Opinion by Sullivan, G. A. The protest was sustained in accordance with stipulation of counsel. United States *v.* Stewart (12 Ct. Cust. Appls. 533; T. D. 40734) followed.—*Treasury Decisions*, Volume 48, No. 22, page 20.

No. 50592. Protest 63289—G of W. R. Zanes & Co. (Galveston). Rubber balls classified as toys at 70 per cent ad valorem under paragraph 1414, tariff act of 1922, are claimed dutiable at 30 per cent under paragraph 1402. Opinion by Sullivan, G. A. From the appraiser's report it was found that the merchandise consists of colored toy rubber balls. On the authority of United States *v.* Stewart (12 Ct. Cust. Appls. 533; T. D. 40734), affirming G. A. 8807 (T. D. 40210), it was held dutiable at 30 per cent under paragraph 1402.—*Treasury Decisions*, Volume 48, No. 23, page 20.

INCREASING EXPORTS OF TIRE ACCESSORIES

According to statistics prepared by the Department of Commerce, American exports of tire rubber accessories and repair materials have risen from a total of 1,124,678 pounds for the first ten months of 1924 to 2,020,710 pounds for the corresponding period of 1925, while values for these goods are respectively $443,527 and $883,368.

AMERICAN IMPORTS OF MISCELLANEOUS RUBBER MANUFACTURED goods reached a total value during the first ten months of 1924 of $1,848,952, the figure declining in the corresponding 1925 period to $1,106,666.

AMERICAN EXPORTS TO THE UNITED KINGDOM OF RUBBER BOOTS have totaled for the first nine months of 1925, 381,855 pairs, value $762,455. Similar exports of rubber shoes reached 181,963 pairs, value $135,220.

The Rubber Trade in Europe

Great Britain

VARIOUS publications are commenting on the fact that British industrial conditions are decidedly improving, and that English trade has definitely turned the corner. The iron and steel industries are said to be showing a stronger position in all departments, the coal markets are becoming more active, and there is somewhat less unemployment. The outlook for the automotive industry is most encouraging, and associated with this is the unchanging strength of the rubber markets. It should be noted that because of the continued high prices for rubber the cost of automobile tires was on December 10 advanced 20 per cent, the increase being general throughout the country. The demand for rubber shares continues, although the speculative element is fortunately less in evidence. The *Financial Times* says:

The strength of the rubber position from the standpoint of the investor lies in the fact that, even if the price of the commodity were to drop to half-a-crown, most companies could still work at a profit sufficient to justify the majority of current share quotations. From now on every company will be gradually increasing its output, and after the wintering period a few months hence, when outputs will undergo the usual temporary decline, the plantations will be operating at full standard production. That being so, increased outputs will provide a sort of insurance against the possibility of a lower sale average for the product.

Concerning Rubber Restriction

Not all publications, however, regard present conditions in the rubber industry with equanimity. The *Manchester Guardian* in a recent editorial states in part: "No one doubts that the intentions of the government (regarding restriction) were excellent. The year 1922 was a period of great depression when many of the plantation companies were threatened with bankruptcy. They had been driven to organize voluntary restriction. When this proved ineffective they sought compulsory restriction by law. . . . The object, as stated by Mr. Churchill and by Lord Stevenson himself, was to stabilize the price of rubber about the limits of 1*s* 3*d* and 1*s* 6*d* per pound. Since the normal cost of production is less than 1s per pound, the scheme was sufficiently generous to the producers and did not at the time, or even for some years, appear to threaten consumers with the possibility of having to pay such ridiculous prices as have been current during the last three months. Since July the price has never been less than 3*s* per pound, and sometimes it has been over 4*s*.

"In fairness it should be added that this is the price only for the free rubber which has not been sold in advance, according to the prevailing custom, under fixed contract. But if some manufacturers are getting rubber today at prices below the market figure, they can only contract for the year 1926 at over 3*s* per pound, and for as late as 1928 at about 2*s* per pound. These are wholly unreasonable prices and far beyond what one can imagine would be possible in a free market. The original intention of the promoters of the scheme to secure a stable basis for the industry has not merely broken down, but has been replaced by State connivance in organized exploitation. There is no precedent for government limitation of supplies of an important raw material for the benefit of private shareholders, and it is an innovation as objectionable in itself as it will probably in the long run be damaging to the industry which it is meant to serve."

Rubber Restriction Denounced

At a recent meeting of the Manchester Section of the Institution of the Rubber Industry, John Haworth, secretary of the India Rubber Manufacturers' Association, read a paper on the "Present Rubber Situation" in which he expressed in very plain terms his opinion regarding the Stevenson rubber restriction scheme. This measure, he claimed, had worked fairly satisfactorily up to May of this year, but "subsequently it had proved a disastrous failure. . . ."

Manufacturers had been criticized for neglecting "on occasions when prices had averaged 1*s* 2.632*d* and 1*s* 5.998*d* per quarter to seize the opportunity of securing large releases by buying in sufficient quantity to drive prices up a fraction of a penny. That however," Mr. Haworth said, "was not their business. Theirs was not the responsibility for working the scheme.

"The Stevenson committee described the measure as a temporary palliative; apparently the government is desirous of making the scheme permanent and of using the resources of government to exploit rubber manufacturers and the rubber consuming public. The accusation can be levied at the government therefore:—

"(1) That apparently the voting capacity of the rubber shareholder outweighs in importance the claims for fair treatment of the rubber manufacturer and the tire consumer and other rubber users.

"(2) That the spirit of the legislation—namely, the stability of price of 1*s* 3*d* per pound, and a fair profit to the producer—is being disregarded to the very great detriment of the reputation of the British Government."

The position taken by Mr. Haworth called forth a reply from Sir Stanley Bois who held that the former's statements showed "much misapprehension of the actual facts." Answering this, Mr. Haworth said in part: "My object was to demonstrate that the motives professed by the plantation interests as inspiring their advocacy of the scheme immediately prior to, and immediately subsequent to the promulgation of the plan, appear on the face of things mysteriously to have undergone some substantial measure of modification. Why should an attempt not be made to controvert fatuous statements that the scheme had not worked owing to 'manufacturers deliberately bearing the market,' which though contrary to common sense is a misapprehension of fact which by its incessant reiteration appears to be becoming an established concept."

Institution of the Rubber Industry

The fourth annual general meeting of the Institution was held November 23, with Sir Stanley Bois, the president, in the chair. After reviewing the activities of the organization during the past year, Sir Stanley said in closing: "The individual member is the man that matters, the man who perhaps may shirk the limelight, but nevertheless has the cause deeply at heart. We are an Institution founded with broad and generous ideals—let us be broad—let those at the top help those at the bottom, but let those at the bottom put themselves in a position to be helped. This is a young institution; it has probably made and no doubt is making plenty of mistakes, but its objects are unassailable. It has already made substantial progress in the direction of their realization, and with the hearty cooperation of every member for which I have already entered my plea, its further progress is assured." At this meeting officers of the Institution were reelected, and diplomas presented to thirteen Fellows and fifteen Associates.

On November 19 Colin Macbeth made the leading address at the meeting of the Birmingham and District Section, Mr. Macbeth taking as his subject "Britain and the Rubber Industry." A comparison was made between British and American rubber manufacturing methods, but, with factories economically managed, the British producer, in Mr. Macbeth's opinion, might hold his own in neutral markets.

On December 4 the Institution held its annual dinner at the Grand Hotel, Manchester. Sir George Beharrell presided, Decem-

ber 7, at the meeting of the London Section, when Dr. S. S. Pickles read a paper on "The Importance of an Adequate Intelligence Service for the Rubber Industry." Diplomas were presented.

British Resent Charges of Rubber "Manipulation"

British officials emphatically deny that the government has been "manipulating" prices of crude rubber, and regret that a resolution has been introduced in the American House of Representatives to "investigate the alleged manipulation of rubber prices by the English colonial governments." One English authority says that it is ridiculous to imagine that the rubber profits went to swell the British treasury. Instead they have benefited the Malayan and Ceylonese local exchequers, and enriched individual growers and speculators. The British treasury, however, has not profited by one cent, except as there has been a resultant improvement in the British trade balance.

Protests are also heard in the rubber markets of Mincing Lane that the situation has been misrepresented in America through the statements made by one of the London Sunday newspapers, asserting that within four years America would have paid Great Britain in rubber profits a sum equivalent to the British debt, based on a rubber price of 4*s* 5*d* (about $1.05) a pound. It is said that the prices paid by American buyers would probably average only about half that amount.

British Notes

The Shipping, Engineering, and Machinery Exhibition, held during the first week of December at the Olympia, London, W., contained an important group exhibit of rubber goods used by the industries mentioned. The display, occupying a large space in the center of the main hall, was arranged by the Propaganda Department of the Rubber Growers' Association, various manufacturers also assisting, while the Rubber Research Association aided by lending a large number of exhibits of scientific apparatus.

A 90 per cent interest in one of the largest rubber companies in Great Britain, Charles McIntosh & Co., has been obtained by the Dunlop Rubber Co. The amount involved in the transaction was reported as being $13,000,000. The McIntosh organization manufactures waterproof clothing as well as various other lines of rubber goods.

At one of the stands at the Public Works, Roads and Transport Congress and Exhibition, held from November 19 to 26 at the Royal Agricultural Hall, London, were displayed some of the paving blocks patented by J. S. Cowper. All these blocks have the same shape, size, and construction, supplying a road surface of durable rubber, and a soft layer at the base of the block. The center layer, or core, is very hard, and there is a method of installation used which is said to prevent "creeping."

Another type of rubber paving block has been laid by Calders, Ltd., at the Uxbridge and Acton road, a section of London where there is very heavy traffic. The paving consists of the standard creosoted wooden blocks, with the difference that they have a truncated triangular groove cut in them, in which is inserted a rubber surface pad. The rubber is fitted in the blocks in an alternate manner, being laid through the central length, while others are grooved twice diagonally.

Germany

Statistics of the German rubber industry for the first nine months of 1925 indicate a considerable growth in the consumption of raw rubber coupled with rather fair increases in exports of various lines of rubber manufactures.

The imports of crude rubber were 155,835 quintals in 1924 to 308,903 quintals in 1925. If importations continue at this rate, total figures for 1925 should be around 400,000 quintals or 40,000 metric tons, which is about twice the amounts used in each of the years 1913, 1923 and 1924.

The stimulus to tire production given by the substantial growth of the local automotive industries in great part accounts for this increased consumption of crude rubber, and it is estimated that at present 70 per cent of the total crude rubber imports is taken up for the manufacture of tires. Moreover, the alert German rubber man is constantly on the look-out for foreign novelties which are pushed locally and abroad, while renewed interest in sports has called forth a demand for rubber clothing, specialties, etc.

The German automotive industry has been able to develop considerably during post-war years owing to the protection afforded by the import prohibitions. These have now been lifted but have been replaced by a fairly high tariff and the industry is attempting to improve by introducing standardization and mass-production. It is estimated that probably 75,000 to 100,000 units of passenger cars and trucks will be produced during 1925.

Besides the above quantities of crude rubber, the German industry also consumed 1,654 quintals of gutta percha in 1925 against 1,164 quintals in 1924; 4,721 quintals of balata, against 2,206 quintals and 81,325 quintals of scrap and old rubber, balata and gutta percha instead of 28,087 quintals.

The chief exports included: 132,991 automobile casings against 115,449 in 1924; 1,009,110 bicycle casings against 1,169,231; 174,949 tubes for automobile tires instead of 139,261, and 2,232,964 bicycle and motor-cycle tubes against 2,274,713. Belting, hose and packing came to 16,947 quintals as compared with 15,078 quintals in 1924; footwear exports were 3,050 quintals against 2,651 quintals, rubber thread 1,361 quintals instead of 778 quintals.

The hard rubber exports totaled 8,819 quintals and 6,898 quintals in 1925 and 1924 respectively.

From the above it will be seen that the increases in exports are not such as to account for a doubling of the amount of crude rubber imports. The reason for this rise in rubber consumption must, therefore, to a large extent, be sought in a sudden and active local demand for which the evacuation of the Ruhr territory is probably chiefly responsible.

Troubles of the Industry

The rubber manufacturers are having a difficult time at present despite the activity indicated by the foregoing statistics. The sudden rise in the price of rubber is bringing numerous complications with it. Many manufacturers were caught short owing to their practice of buying from hand-to-mouth while prices were low. The public refuses to pay higher prices for rubber goods and to crown all labor is demanding more wages in certain sections and going on strike to get their way. Just at present a strike is on in the Hessen and Hessen-Nassau district involving a number of rubber factories among which are some of the more important works, as the Peters Union of Frankfurt-am-Main. It has already continued for almost four weeks and thousands of men are out of work at present writing.

Curiously enough owing to the rubber boom conditions are such that from various quarters the remark is heard that the manufacturers in the strike area are better off than those outside, as they have a perfect excuse for shutting down their works and ceasing production. Since it was known beforehand that a strike was imminent manufacturers could prepare for it and most of them are able to fill current orders out of stock.

What is exercising the minds of those concerned is whether, once the strike is settled, it would be advisable to produce to capacity to make up for lost time or not. Certainly, the pessimistic rumors concerning the automotive industry that are going the rounds are not encouraging. One well-known rubber manufacturer, interviewed by the *Gummi-Zeitung*, had a very dark view of the situation and expressed the hope that the big automobile and bicycle concerns, a number of which are fighting hard against a complete breakdown, would soon recover. Furthermore, the prevailing lack of money makes men hesitate to buy expensive rubber, work it and then have to sell it at almost any price to obtain cash again. Numbers of rubber men, therefore, are not at all disposed to regard

the present situation cheerfully, instead they complain bitterly of the difficulties they experience in carrying on in the face of high prices for raw materials and the hazards of collecting payments from a newly arisen group of dealers who believe in buying and selling but do not wish to hear about paying.

Continental Caoutchouc and Gutta Percha Co.

The Continental Caoutchouc-und-Gutta Percha-Compagnie, Hannover, announces that in the first half of the current business year sales of rubber goods increased greatly, leading to satisfactory profits. This continues through the second half year too. The turnover in tires for passenger cars, trucks and bicycles, and results with other goods and clothing up to the present show a rising tendency as compared with the preceding year.

Business was favorably influenced by the circumstances that the concern, due to its intimate relations with the American rubber industry, had years ago adopted the most up-to-date American methods of working and is able to utilize a special program which will shortly be completed and whereby the company hopes to effect considerable economies. The growing crisis in the business world has also strongly affected the German automotive industry, which is causing the management to take suitable measures. However, the dismissing of help in connection with these measures will be limited to a comparatively small percentage of the total labor force and office staff which still totals about 12,600. Naturally, the company is also affected by the difficulty of collecting payments due, but up to the present it has not suffered any losses worth mentioning.

German Company News

Asbest-und-Gummiwerke Alfred Calmon A.-G., Hamburg, reports that results during the current year were satisfactory up to the fall. Since then the shortage of money and credit has caused a decrease in goods.

The firm of Gustav Engel, Potsdamerstrasse 131, Berlin W. 9., has put on the market transparent rubber surgical goods including hot water bottles, syringes and tobacco pouches.

The rubber factory of A. Benndorf & Co., G. m. b. H., Leipzig-Plagwitz, produces various kinds of rubber goods and rubber stockings. Among its latest novelties are seamless ventilated rubber stockings, knee and foot protectors with pneumatic cushioning and ventilation, also seamless pneumatic cushion seats.

Russia

The *Industrie und Handelszeitung* learns that the Russian Rubber Trust intends to modernize its factories. During 1925-1926, new and up-to-date equipment to the value of 4,350,000 rubles will be purchased in America, England, France and Germany. Of this 1,500,000 rubles will go for new machines for the Krasnyj Treugolnik and 3,200,000 rubles for the Moscow works and for the new factory it is planned to erect in Jaroslawl to manufacture pneumatic tires and technical rubber goods.

The Trade Agency of the Soviet Government in Germany announces that the gross production of rubber goods represented the following values in thousands of rubles at pre-war prices:

	1923-24	1924-25
First Quarter	8,475	18,210
Second Quarter	7,972	23,271
Third Quarter	6,307	—
Fourth Quarter	9,124	—
Total	31,878	41,481
April, 1925	9,577	
May, 1925	9,526	

The business year begins in October, therefore, there is a total of 60,584,000 rubles for the first eight months of the period 1924-25 against 31,876,000 rubles for the entire twelve-month period 1923-24.

European Notes

Up to the present, waste rubber on the Continent has not followed the sensational rise of crude rubber as there is plenty of waste material. Oddly enough the cause of the shortage in the crude commodity, namely, the increase in the use of automobile tires, is also the cause of the excessive supply of old rubber, for it seems tires are being used and scrapped in far greater quantities than reclaimers can absorb. The price offered for scrap does not encourage collection in any center where freight exceeds 10*s* per ton. The situation in regard to tubes is rather better. Red automobile tubes are in moderate demand and mixed cycle tubes are selling without difficulty. Solid tires, except black, goloshes, mechanical wastes, black wastes, hosing and insertion, ebonite scrap are all more or less inactive.

However, reclaimers are busier than ever in all countries so that a gradual improvement in prices is expected though until demand overtakes collection no sharp rises in price need be looked for.

The Rubber Trade in the Far East

Malaya

A GREAT deal of excitement was caused by the news of the publication in Ceylon of confidential proposals made by the Colonial Office regarding the release of rubber for the present quarter. The mere intimation that exports might be increased by 20 per cent instead of 10 per cent adversely affected the market. The uncertainty and anxiety here were all the greater since nothing at all had been made public officially in Malaya regarding these most important proposals and people had nothing to go by but the reports from Ceylon.

The Penang Chamber of Commerce, considering that a release of 20 per cent would be detrimental to local interests, particularly in regard to the present labor situation and the general dislocation which might result from a change of policy, sent a resolution to the Colonial Secretary urging that no alteration should be made in the original scheme of restriction.

The *Straits Times* regarded the possibility of an increase of allowable exports amounting to 20 per cent with a good deal of tranquillity, declaring that things at present had reached the stage where it was not very important what releases were authorized since in all probability, owing to the labor situation, Malaya would have all she could do to produce even 80 per cent of standard. There was much more reason to worry about the effect high prices are having on native producers in Malaya, as it seems that the *bahgi dua* system, whereby the tapper gets half the rubber he collects, which is the prevailing system in Sumatra, is also making headway here. Trees are being badly damaged as a consequence and since native rubber accounts for about a third of the planted area, this is a matter of grave concern to all interested in the future of the Malayan rubber industry.

Of course, there are those that disagree with the above paper regarding the amount of labor available and the effect it will have on actual production. A planter from Negri Sembilan, for instance, states that at least 90 per cent of the estates there can easily produce their 100 per cent of standard production and 30 per cent can produce at a rate nearer 500 pounds per acre than 400 pounds. There is a certain shortage of labor but this is rapidly being made good, in fact on one large estate afternoon tapping is being done because the manager has received orders to accumulate a very large stock for the time when restriction is removed. But while this may be true for one district, it remains to be seen what the entire peninsula can do.

Meanwhile, the subsequent announcement that the exportable allowance would be increased by only 10 per cent has had a reassuring effect.

Revising the Restriction Scheme

According to further information from Ceylon, it appears that the proposals regarding restriction embodied a new scale of releases whereby, when price average is below 1*s* 3*d* in any quarter, the exportable maximum will be decreased by five per cent for the ensuing quarter; when below 1*s* 2*d*, the decrease will be 10 per cent; below 1*s* 1*d*, 15 per cent and below 1*s*, 20 per cent. When the average price is not below 1*s* 3*d* the exportable maximum will be increased by 5 per cent for the ensuing quarter; if not below 1*s* 6*d*, the increase will be 10 per cent; if not below 1*s* 9*d*, 15 per cent, and if not below 2*s*, 20 per cent. When a hundred per cent release is reached, restriction will automatically be suspended until the price again falls below 1*s* 3*d* in any quarter after which the new scale will operate.

It has been recommended by Ceylon interests that these proposals should be enforced from February 1.

It is recognized in Malaya that some kind of revision of the Stevenson scale is desirable if only because of an error the Colonial Office made in regard to its interpretation of the clause dealing with the action to be taken if in any quarter the price fell below 1*s* per pound. This interpretation read that in such a case the exportable allowance should be reduced by 5 per cent from the figure in force during the quarter in question, thus, if the percentage were 80 during a given quarter and the average fell below 1*s*, the percentage for the next quarter would be fixed at 75.

As the Malayan Planters' Association recently pointed out in calling attention to it, such a ruling would make the Steverson scheme entirely useless for meeting an emergency. If at the present moment, prices should suddenly drop to a rate below 1*s*, by allowing a reduction of only 5 per cent each quarter, it would take over a year and a half before the 55 per cent basis, provided for by the scheme when rubber is below 1*s*, would be reached.

The proposals submitted to Ceylon would give more protection in similar circumstances, but even then, suppose slump conditions suddenly came when the allowance was 105 per cent, it might take nine months to get down to 55 per cent.

Three Years of Restriction

The *Straits Times* reviews the effect of the working of the restriction scheme, now in its fourth year. The third year ended October 31, 1925. During that year the total value of rubber exports was $593,368,000 against $252,569,000 in the preceding year, a gain of $340,799,000.

If the value of imports is deducted then the figures are: $407,872,000 for 1924-5 and $185,652,000 for 1923-4, leaving a net Malayan gain of $222,220,000 for 1924-5.

If the figures for the year preceding restriction and those for the entire restriction period are compared we get the following:

	Net Malayan Export Tons	Net Malayan Value
1921-2 (No Restriction)	213,954	$137,525,321
1922-3 (Restriction)	185,435	221,545,616
1923-4 (Restriction)	167,696	185,652,000
1924-5 (Restriction)	189,000	407,872,000

The earnings for three years under restriction total $815,069,616. On the basis of the 1921-2 figures, earnings for three years would have been $412,575,963, which gives a gain of $402,493,653 for the restriction years.

The rates of export allowed at the minimum rate of duty under the Stevenson scale have been:

	1922-3 Per Cent	1923-4 Per Cent	1924-5 Per Cent
November-January	60	60	50
February-April	60	60	55
May-July	65	60	65
August-October	60	55	75

The average selling prices for each year have been: 1921-2, 29¼ cents; 1922-3, 52½ cents; 1923-4, 45 cents, 1924-5, 97 cents.

In the three restriction years imports of rubber, mostly native, have been: 62,846 tons in 1922-3; 101,009 tons in 1923-4 and 150,568 tons in 1924-5. No allowance for dirt and moisture is made in the above weights.

Rubber Stealing

Rubber producers on or near Singapore Island have a serious problem to cope with, that is, the alarming prevalence of latex-stealing. A few years ago, even when prices were high, little was heard of rubber stealing. Of late, however, every moderately large estate on the island suffers and no amount of vigilance seems to be of material use. Latex is stolen while it is collecting after the tapper has made his cuts. To stamp out the practice it is suggested that accurate returns should be demanded from small holders and factories.

Ceylon

The report of the Department of Agriculture of Ceylon contains a review of activities in rubber for 1924.

The export percentages of standard output were 60 per cent from January to July, 55 per cent from August to October, and 50 per cent for November and December. The total export of Ceylon produced rubber was 37,036 tons, value 63,749,711 rupees, against 37,070 tons, value 73,594,349 rupees in 1923. During the months of November and December 26,545 gallons of latex were exported, as against insignificant amounts during the first ten months of the year. It was therefore thought advisable to bring rubber latex exports under the rulings of restriction. Here we may add that since then exports of latex from Ceylon have been practically nil, whether in consequence of the above measure or for other reasons it is, of course, rather difficult to say.

The total number of rubber estates at the end of 1924 was 4,250 above ten acres and 24,432 under ten acres. The estates of ten acres and over covered a total area of 415,155 acres, those under 10 acres, 45,870 acres, together 461,025 acres.

The average price at local auctions was 75 cents per pound for the whole year. In January and February, prices for top grades were around 78 cents, but by June prices had dropped to 52½ cents for smoked sheet and 54½ cents for contract crêpe. After this, however, a steady rise set in and by the end of the year, sales at 1 rupee per pound were made. Throughout the year crêpe obtained a small premium over sheet and exports of sole crêpe were fair.

Most estates continue to give close attention to disease. But small holdings, except those adjoining larger estates, still let things slide in this regard. Manurial experiments to see whether pod and leaf disease can be controlled or influenced by manuring were continued and investigations into brown bast are still being undertaken. During the past year little interest was shown in budding rubber but the Department of Agriculture and the Rubber Research Scheme hope to be able to induce estates to take the preliminary steps of proving their best trees.

No new disease of Hevea has been recorded, nor have any of the known diseases attracted special attention. Pod rot and leaf fall were again prevalent in the main rubber-growing districts and at Peradeniya, where the disease does not usually occur, a few infected pods were also found.

The Central Experiment Station, Peradeniya, is carrying out a number of tapping and manurial experiments. Tapping experiments include the alternate daily versus the alternate monthly method on hill side rubber, and tapping of hill top rubber planted in three methods: (1) 20 feet by 20 feet; (2) in avenues 15 feet by 15 feet, 40 feet between avenues, and (3) in clumps of 4 trees, 15 feet by 15 feet, 40 feet between clumps.

Colombo Rubber Traders' Association

At a meeting of the Colombo Rubber Traders' Association, the chairman, T. L. Villiers, discussing restriction pointed out that while prices at present are admittedly high, the average over

the three restriction years is still below the pivot price of 1*s* 6*d* per pound. There was nothing which could justify at the present moment a release or the doing away of restriction owing to the present market price. The market still was very sensitive and it required very little to cause a fall in price or a rise. He wished to remind buyers who were always ready to take out figures as soon as there were signs of a release or a sign of improved production, that restriction had taught the producers many things and he hoped they would not forget their lesson and sacrifice bark to benefit by high prices no matter how long the present level might be maintained.

If the future welfare of the estates was considered, the increase in output as 100 per cent was gradually approached, would not be as great as many a buyer seemed to expect. No one could say certainly how long consumption would keep pace with production and there was still every possible need for caution.

From the annual report it appears that Ceylon exported 18,838 tons in the period January-June, 1925, against 16,088 tons for the corresponding period of 1924, an increase of 2,750 tons. The quantity allowed for export under restriction was 36,395 tons in 1924, and for the first half of 1925, 20,016 tons. The distribution of the rubber was as follows:

	Six Months Ended June	
	1924 Tons	1925 Tons
United Kingdom	4,022	3,979
America	10,980	12,360
Continent of Europe	869	1,783
Australia	133	623
Japan	56	50
Other countries	28	43
Totals	16,088	18,838

The quantities offered and average prices for top grades at local auctions since 1920 were as follows:

Year	Tons	Rupees
1920	16,107	0.80
1921	16,689	0.52
1922	17,948	0.53
1923	14,628	0.88
1924	15,952	0.75
First half 1924	7,646	0.69
First half 1925	6,735	1.19

Restriction Rules

It is officially announced that for trees planted in 1921 the maximum assessment per acre shall be 60 pounds for the period November 1, 1925, to October 31, 1926.

In making any assessment where rubber is interplanted with other crops, 100 rubber trees is to be taken as the equivalent of, and capable of producing as much rubber as, one acre on which only rubber is planted, provided the allowance for such interplanted areas in no case exceeds the allowance on an acreage basis.

Exports for September

The Controller of Rubber, Ceylon, states that exports of rubber from Ceylon during September, 1925, totaled 5,203 tons of which 376 tons were imported. This compares with 4,061 tons exported during September, 1924, when 161 tons were imported.

Netherlands East Indies

A certain amount of uneasiness is felt in Java and Sumatra, because so many plantations, opened up with Dutch capital, are passing into foreign hands, chiefly English. For some time past English capital has been showing interest again in rubber estates in Java and the East Coast of Sumatra and it is felt that more Dutch capital is needed. Foreign undertakings frequently favor their own countrymen, their own trade, shipping, markets, etc., while the Dutch do not generally do this. If the funds obtained from sales of estates were used immediately for new undertakings there would be no harm done. But this is not often the case, therefore selling productive estates to foreign capital means loss of influence in this country.

It is therefore essential that new Dutch investments take place to keep up the same level. To be sure, numbers of Dutch-owned estates have recently issued new stock to be able to extend existing areas, but very little is heard of the founding of new companies, as in 1910 and 1911, to open up new lands. It seems that greater concentration is taking place, because only the big concerns, and among these some of the most important, are drawing new capital in order to expand and this does not balance the amount of Dutch capital that goes over into other hands. This is of particular significance in Java where expansion is limited.

The Dutch have always welcomed and supported foreign capital, but in certain quarters it is felt that national interests should also be considered and that these could best be served by keeping Dutch investments in Dutch territories.

Among recent sales to British are to be noted, besides the very important sale of the estates of the Si Boelan and Soeka Radja estates on the East Coast of Sumatra to the Allied Sumatra Plantations, Limited, mentioned in the December issue of The *India Rubber World*, are the following:

The Tapos rubber estate belonging to the N. V. Cultuur Mij., Tapos, Halte Tjibeber, Java, to the London Financial Trust. The estate covers an area of about 1,000 bouws of which 350 bouws are planted to rubber. Sale price was 190,000 guilders.

The estate Feroeway, Sumatra, owned by the Ned. Koloniale Handelsvereeniging, Amsterdam, to the London Financial Trust. The sale price could not be ascertained. The land is situated in the Tamiang district, East Coast Sumatra, and the acreage is 5,500 of which about 1,500 acres are planted with rubber and 125 acres with oil palms.

Negotiations are afoot for the sale of the rubber and tea estate, Bodjong Sokka, Java, to an English concern.

Netherlands East Indies Notes

The need of an open market for rubber at Medan is being discussed in the local press. It is pointed out that the East Coast of Sumatra has developed considerably during the last few years and that the present time is most opportune to inaugurate a rubber market and do away with the obsolete system now prevailing. Much benefit to all concerned is seen in such a movement once it is properly organized and supported.

Not only in Malaya, but in Sumatra, too, stealing of rubber is assuming serious proportions. Here, too, the coolie is but a tool in the hands of others, in this case the Chinese dealers who buy supplies for shipment to Singapore. These people are very cunning and it is no easy matter to make convictions.

The prosperity brought to the native rubber planting communities in the last three years is reflected in the increased buying of automobiles and bicycles. Thus Borneo imported 500 automobiles in that period and in one district alone 10,000 bicycles were bought since 1922. In Sumatra a similar condition prevails. In one province the number of automobiles rose from 300 around 1922 to about 1,300 at the present time.

Exports of rubber from the outer possessions amounted to 87,543 tons during the first half of 1925. Of this 55,653 tons went to Singapore and 18,686 tons to America. The three most important shipping ports were Belawan-Deli (16,537 tons), and Djambi (14,069 tons), both in Sumatra, and Banjermassin, Borneo (11,280 tons). Shipments from Palembang (Sumatra) and Pontianak (Borneo) were 8,628 and 6,921 tons respectively.

The export of jelutong from Borneo and West Coast of Sumatra for the same period was 813 tons, of which 648 tons went to Singapore. Banjermassin exported 306 tons and Palembang 152 tons.

BRAZIL IMPORTED 2,063 TONS OF RUBBER GOODS IN 1924. THIS is the largest quantity since 1920, when imports amounted to 2,731 tons. In 1921, came a sharp drop to 721 tons, but the following year the figure had risen to 1,760 tons and in 1923 was 1,863 tons.

Rubber Patents, Trade Marks and Designs

The United States

November 10, 1925*

1,560,524 Pulley with layer of vulcanized resilient material. Edward S. Avery, East Hampton, New York.
1,560,551 Cushion tire. Ernst Eger, assignor to Morgan & Wright, both of Detroit, Michigan.
1,560,583 Heel. William J. Kent, Brooklyn, New York.
1,560,643 Microphone button with rubber diaphragm. Walter H. Barber, Melrose, Massachusetts, assignor to Submarine Signal Co., Portland, Maine.
1,560,825 Elastic protective device for knees. Ludwig Kelticka, Schles-Ostrau, Czechoslovakia.
1,560,833 Life saving suit. Pierre Levesque, Chicago, Illinois.
1,560,890 Catamenial bandage. Elizabeth C. Whitlock, Chicago, Illinois.
1,560,909 Toy camera with rubber tube and bulb. Harry R. Gill, assignor to The Eagle Rubber Co., both of Ashland, Ohio.
1,560,995 Sole. Louis Kaplan, New York, N. Y.
1,561,140 Toothbrush having compressible bulb. Aloysius J. Coleman, Chicago, Illinois.
1,561,172 Hat lining with elastic tape. Daniel Koch, Boston, Massachusetts.
1,561,184 Automobile bumper employing inflated tubes. Christopher Offenhauser, Philadelphia, Pennsylvania.
1,561,192 Flexible coupling provided with rubber balls. Clarence Winfred Spicer and Gurdon Lucius Tarbox, assignors to Spicer Manufacturing Corporation, all of Plainfield, New Jersey.
1,561,353 Inflatable toy eye. Arthur Peal, London, England.
1,561,430 Footwear. Alfred A. Glidden and Frank D. Bean, assignors to Hood Rubber Co., all of Watertown, Massachusetts.

November 17, 1925*

1,561,512 Fishing tackle employing elastic suspension. Charles Fredricks, Brooklyn, New York.
1,561,590 Fountain pen. Andreas Bienenstein, assignor to The Conklin Pen Manufacturing Co., both of Toledo, Ohio.
1,561,628 Heel and cushion plug. Harry S. Willis, Philadelphia, Pennsylvania.
1,561,638 Rubber book cover. Orby Bertram Crowell, assignor to The Canadian I. T. S. Rubber Co., Limited, both of Toronto, Ontario, Canada.
1,561,668 Step tread. Frank H. Stanwood, Wilmette, assignor to Stanwood Equipment Co., Chicago, both in Illinois.
1,561,684 Bead core for pneumatic tires. Frank H. Beyea, assignor to John R. Gammeter, both of Akron, Ohio.
1,561,711 Shoe heel. John R. Gammeter and Harry Dewhirst, both of Akron, Ohio, assignors to The B. F. Goodrich Co., New York, N. Y.
1,561,714 Non-return valve with elastic tube. William Oliver Shakespear Greener, Salcombe, South Devon, and Jabez Cliff Tibbits, Walsall, both in England.
1,561,721 Toy dirigible. Joseph A. Humphrey, Seattle, Washington.
1,561,759 Vehicle tire. William O. Wetmore, Douglas, Arizona.
1,561,764 Pneumatic wheel. Harry N. Atwood, Monson, assignor to Rubwood, Inc., Lawrence, both in Massachusetts.
1,561,766 Pneumatic wheel. Harry N. Atwood, Monson, assignor to Rubwood, Inc., Lawrence, both in Massachusetts.
1,561,888 Athletic supporter. Joseph L. Stengel, assignor to Martin-Page Co., both of Middlesboro, Kentucky.
1,561,916 Swimming cushion. Gotthard Ernst, Wolmirstedt, Germany.
1,562,069 Pumping apparatus with rubber diaphragm. Leroy O. Arringdale, assignor to Edson Manufacturing Corporation, both of Boston, Massachusetts.
1,562,086 Elastic tape threaded antiglare eyeshield. Roland H. Gilkerson, assignor of one-half to Voness D. Chipman, both of Watertown, Wisconsin.
1,562,128 Brassière with hose fasteners. Florence M. Stanley, Lexington, Kentucky.
1,562,267 Fountain pen. John C. Wahl, Chicago, Illinois, assignor to The Wahl Co., Wilmington, Delaware.
1,562,276 Buoyant chair. Antonino Assenzio, New York, N. Y.
1,562,291 Rubber paving block. Gerald Otley Case, assignor to Rubacrete Limited, both of London, England.
1,562,294 Leg and foot developer. John J. Cooper, New York, N. Y.
1,562,302 Elastic respiratory mask. John Mansfield Dean and Andrew N. Kittrelle, both of Memphis, Tennessee.

November 24, 1925*

1,562,534 Ball game. Bror Wingard, Everett, Washington.
1,562,577 Automobile tire protective device. Alphonse F. Moneuse, New Rochelle, New York.
1,562,625 Toy balloon. Ikley C. Fife, assignor to Elizabeth C. Fife, both of Chicago, Illinois.
1,562,674 Solid tire wheel. Harry N. Atwood, Monson, assignor to Rubwood, Inc., Lawrence, both in Massachusetts.
1,562,724 Rubber cuff button keeper. Howard A. Redfield, Monterey Park, California.
1,562,954 Rubber hose. Howard W. Goodall, Aldan, Pennsylvania.
1,562,993 Rubber pedal cover. Frank H. Stanwood, Wilmette, assignor to Stanwood Equipment Co., Chicago, both in Illinois.
1,563,015 Laundry appliance rubber coated. May C. Christy, Cleveland, Ohio, deceased, James Christy, administrator.
1,563,040 Elastic shock absorber. Clarence S. Preston, San Diego, California.
1,563,098 Heel. Joseph H. Miller, assignor of one-half to Emil Schlamp, both of St. Louis, Missouri.
1,563,230 Flexible disk for couplings. Carl A. Schell, Cleveland, Ohio, assignor to Thermoid Rubber Co., Hamilton Township, New Jersey.
1,563,231 Disk for flexible couplings. Carl A. Schell, Cleveland, Ohio, assignor to Thermoid Rubber Co., Hamilton Township, New Jersey.
1,563,276 Heel. James E. Grosjean, Lima, Ohio.

December 1, 1925*

1,563,320 Tire valve. Charles W. Beck, Toledo, Ohio, assignor to The Beck Frost Corporation, Detroit, Michigan.
1,563,464 Elastic gasket for jar covers. Chester W. Bisland, Freemont, Nebraska.
1,563,571 Jumping balloon. William E. Huffman, Clarence F. Adams, and Matt Q. Corbett, all of Dayton, Ohio.
1,563,701 Condensation preventing device employing rubber strip. Ralph C. Frederickson, Kensal, North Dakota.
1,563,746 Shirt retainer with rubber member. Herbert Sachs Hirsch and Morris Hirsch, both of Newark, New Jersey.
1,563,764 Elastic stocking top. Walter J. McClelland, East Orange, New Jersey.
1,563,847 Tire gage. George H. Hall, Hannibal, Missouri, deceased, Emma A. Wilson, executrix.
1,563,876 Rubber shock absorbing door device. Balus F. Smith, Kansas City, Missouri
1,563,912 Rubber return ball. Vernon L. Miller, assignor to The Faultless Rubber Co., both of Ashland, Ohio.
1,563,943 Top press roll for paper making machines. Raleigh B. Adams and Frederick R. Woodward, both of Newton, assignors to Stowe & Woodward, Newton Upper Falls, all in Massachusetts.
1,563,944 Massage applicator. Edward B. Allen, Newton, Connecticut.
1,563,970 Rubber heel tip. Arthur M. Eichorn, assignor to Evernu Rubber Heel Corporation, both of New York, N. Y.
1,564,060 Sole. James E. Grosjean, Lima, Ohio.
1,564,108 Tire valve. Joseph Pluto, Pontiac, Michigan.
1,564,117 Gaiter with elastic strap. Robert Alfred Auberge, Paris, France.
1,564,140 Amusement device employing rubber balls. Ryuji Sato, New York, N. Y.
1,564,158 Cushion heel. George E. Warren, Swampscott, Massachusetts, assignor to United Shoe Machinery Corporation, Paterson, New Jersey.
1,564,186 Flexible coupling. Clarence Winfred Spicer and Gurdon Lucius Tarbox, assignors to Spicer Manufacturing Corporation, all of Plainfield, New Jersey.

*Under Rule No. 167 of the United States Patent Office, the issue closes weekly on Thursday, and the patents of that issue bear date as of the fourth Tuesday thereafter.

The Dominion of Canada

November 10, 1925

255,257 Cushioned elbow pad for telephone. Jennie V. Erickson, St. Paul, Minnesota, U. S. A.
255,284 Life saving suit. James F. Mordica, Philadelphia, Pennsylvania, U. S. A.

November 17, 1925

255,413 Paving block. Ernest Clark, Rio de Janeiro, Brazil, South America, and Daniel Thomas Gilmartin, Jr., East Orange, New Jersey, U. S. A.
255,426 Polishing device. Eustace Carlill Brierley, Bath, Somersetshire, England.
255,435 Fountain pen. Arthur Claus Dahlberg, Chicago, Illinois, U. S. A.
255,510 Pneumatic cushion. The Airrubber Corporation, assignees of Arvid E. Anderson, both of Chicago, Illinois, U. S. A.

November 24, 1925

255,657 Tire valve casing cap. Frank C. Hughes, Chicago, Illinois, U. S. A.
255,674 Soft tire alarm. Otto Nelson, Los Angeles, California, U. S. A.
255,707 Rubber traction device for tires. Carson R. Stewart, Akron, Ohio, U. S. A.
255,720 Vacuum preserving device. Frederick V. Winters, New York, N. Y., U. S. A.
255,772 Rubber pavement. The International Motor Co., assignee of Alfred F. Masury and August H. Leipert, both of New York, N. Y., U. S. A.

December 1, 1925

255,938 Tire indicator. Gustave Herbert Schmidt, Bydgoszcz, Poland.
255,943 Eraser for fountain pens. John Straub, Ashley, North Dakota, U. S. A.
255,972 Pneumatic tire. The Detroit Pressed Steel Co., Wilmington, Delaware, assignee of Alden L. Putnam, Lansing, Michigan, both in U. S. A.

Chemical patents will be found on page 202. Machinery and Process Patents on pages 205-206

The United Kingdom

November 4, 1925

239,554 Rubber driving belt. A. E. White, 88, Chancery Lane, London.
239,582 Colotomy appliances with rubber frames. Salt & Son, Ltd., and R. C. Griffiths, 5, Cherry street, Birmingham.
239,671 Rubber sheeted diaphragms for gramophones. P. Lawson, 50, Rectory Road, Barnes, London.
239,696 Rubber window buffers. F. H. Hall, Cleeve Cottage, Holford, near Bridgwater, Somerset.
239,706 Golf club handles with rubber stops. J. M. McLean, 7, Levengrove Terrace, Dumbarton.
239,737 Door stops. H. Nichols, 324, Yorkshire street, Rochdale.
239,746 Safety razor employing rubber. J. Macrides, 48 Rue Plumier, Marseilles, France.
239,771 Electric junction boxes with rubber bushes. Callender's Cable & Construction Co., Ltd., and E. Warbrick, Anchor Works, Leigh, Lancashire.
239,789 Cushion tire. F. W. Golby, 3, John street, Bedford Row, London (Lambert Tire & Rubber Co., Barberton, Ohio, U. S. A.).
239,811 Skid preventing device for pneumatic and solid tires. A. Mills, 168, Forster street, Warrington, Lancashire.
239,822 Golf tee with rubber tube. A. N. Goudie, 32, Miller street, Glasgow.
239,866 Soles and heels. M. Berger and J. Lindner, 20A, Argentinierstrasse, Vienna.*

November 11, 1925

239,996 Door silencer. A. Smye, E. and E. F. Crudgington, 146, Conybere street, Birmingham.
240,052 Rubber door holders. H. St. J. Walton, 64, Keppel street, New Brighton, Christchurch, and T. J. Thurman, Willis street, Wellington, both in New Zealand.
240,067 Universal joints using rubber balls. C. W. Spicer, 1300 Central avenue, Plainfield, and G. L. Tarbox, 53 Hudson street, North Plainfield, both in New Jersey, U. S. A.
240,069 Vehicle spring connections. T. Shields, 30, Southampton Buildings, London (International Motor Co., New York, N. Y., U. S. A.).
240,088 Rubber coated cylinder paper machines. J. Henrotte, 230 Avenue de Tervueren, Woluwe St. Pierre, near Brussels.
240,123 Aerostats employing rubber. Luftschiffbau Zeppelin Ges., Friedrichshafen-on-Bodensee, Germany.*

November 18, 1925

240,204 Solid tire. E. B. Killen, 27, Queen Victoria street, London.
240,300 Rubber foot rests for motorcycles. Triumph Cycle Co., Ltd., and J. A. Phillips, Triumph Works, Priory street, Coventry.
240,302 Ink bottles employing rubber seating. S. G. Killick, 67, High street, Notting Hill Gate, London.
240,359 Ash trays with rubber connections. E. A. Bellow, 11, Albany Road, St. Leonards-on-Sea, Sussex.
240,368 Rubber rings on vehicle wheels. E. Donaghy, Graham Gardens, Lisburn, Ireland.
240,375 Rubber upholstery padding. L. E. B. Desmarquoy, 137 Boulevard Magenta, Paris.
240,377 Combs with rubber bands. Parker & Co. (London), Ltd., and F. Parker, 4, Bridgewater Square, Barbican, London.
240,384 Hose supporters. E. P. Duffy, Lock Box 183, Arvada, Colorado, U. S. A.
240,396 Tire attachment of rubber. H. Sheils, 80, Strand Road, Londonderry, Ireland.

November 25, 1925

240,513 Hat machine using rubber belt. E. C. R. Marks, 57, Lincoln's Inn Fields, London (United States Hat Machinery Corporation, New York, N. Y., U. S. A.).
240,517 Paving blocks. L. Cox, 27, St. George's Square, Westminster, and R. W. Cox, 12, Waldegrave Park, Strawberry Hill, Twickenham, Middlesex.
240,544 Tar machine having rubber squeegee. W. P. Wilkins, 79, Mark Lane, London.
240,627 Rubber heel pads. A. A. Crozier, 75, Landsdowne Road, West Didsbury, Manchester.
240,652 Rubber tennis appliances. H. Penn-Gaskell, 17, Earl's Court Square, London.
240,657 Parquet flooring having rubber pads. E. H. H. Vertigan, 7, Ebury street, Westminster.
240,729 Rubber masks. J. G. Franklin & Sons, Ltd., and H. W. Franklin, 11, Colvestone Crescent, Dalston, London.
240,747 Cover for tanks. Soc. Electro-Mecanique D'Appareilage Pour L'Essence, 2 Rue du Parc, Bois-Colombes, France, assignees of Marquis de Salamanca, 12 Ferraz, Madrid, Spain.
240,765 Tire repair patch. R. L. Peugh, Oklahoma, U. S. A.
240,836 Rubber vehicles bodies. W. Stadie, Automobilzentrale, Milchstrasse, Schneidemühl, Germany.
240,860 Electrodes with ebonite frames. A. Pouchain, 87 Corso Re-Umberto, Turin, Italy.*

*Not yet accepted.

New Zealand

October 8, 1925

54,436 Inflated rubber raft. Nicholas Straussler, 32 St. Swithin's Lane, London, England.

Germany

422,309 (January 10, 1924). Automobile hand wheel steering devices. Continental Caoutchouc-und-Gutta-Percha-Compagnie, Hannover.

Trade Marks

The United States

Two Kinds of Trade Marks Now Being Registered

Under the rules of the United States Patent Office, trade marks registered under the Act of February 20, 1905, are, in general, fanciful and arbitrary marks, while those registered under the Act of March 19, 1920, Section 1 (b), are non-technical, that is, marks consisting of descriptive or geographical matter or mere surnames. To be registered under the later act trade marks must have been used for not less than one year. Marks registered under this act are being published for the first time when registered, any opposition taking the form of an application for cancellation.

November 10, 1925, Act of February 20, 1905

205,453 The words: "ALPA-SYL" enclosed in an oblong box—boots, shoes and slippers made of leather, canvas, rubber, etc. James M. Daly, Lynn, Massachusetts.
205,460—BATES—shoes and slippers of leather, rubber fabric, etc. A. J. Bates Co., Webster, Massachusetts.
205,474 BLACK CAT—shoes made of rubber, canvas, leather, etc. Hofheimer Brothers Company, Norfolk, Virginia.
205,477 Representation of a wheel on which are superimposed the words: "RAILS" and "FOR FOOT HARDWEAR"—shoes of leather, canvas, rubber, etc. The Fair Dry Goods Co., Eagle Pass, Texas.
205,508 "ALWAYS SOMETHING NU"—shoes of leather, rubber, fabric, etc. Nu-Way Shoe Co., New York, N. Y.
205,513 SNOW KING—gloves of leather, rubber, fabric, etc. C. D. Osborn Co., Chicago, Illinois.
205,514 Representation of a man standing on a rail—gloves of leather, rubber, fabric, etc. C. D. Osborn Co., Chicago, Illinois.
205,515 Representation of a boy throwing snow-balls—gloves of leather, rubber, fabric, etc. C. D. Osborn Co., Chicago, Illinois.
205,543 GOLD STRIPE—shaped heel insert of rubber. Gotham Silk Hosiery Co., Inc., New York, N. Y.
205,565 AMBASSADOR—men's unlined dress gloves of leather, rubber, fabric, etc. O. C. Hansen Manufacturing Co., Milwaukee, Wisconsin.
205,567 Fanciful sign containing the words: KLEVER-KIDS above which appears the representation of two children's heads—boots and shoes of leather, rubber, fabric, etc. Goldie Shoe Co., Los Angeles, California.
205,577 Fanciful sign bearing the words: THE DAN-DEE CHUMS—leather, rubber or fabric shoes. Gunnerson Shoe Co., Los Angeles, California.
205,586 THAT'S-THAT—corsets, brassières, girdles and hose supporters, Treo Co., Inc., Jamaica, New York.
205,665 A double line triangle in which are the words: "TACKINE," "RUBBER SERVICE LABORATORIES," and underneath the words: "TRADE MARK"—compounding ingredient and rubber softener. The Rubber Service Laboratories Co., Akron, Ohio.
205,669 VALCLAR KASE-QUINBY RUBBER COMPANY, NEW YORK—rubber and rubberized apron and sanitary baby pants. Kase-Quinby Rubber Co., Inc., New York, N. Y.

November 10, 1925, Act of March 19, 1920

205,676 KANTSKRATCH—mops. Tucker Duck & Rubber Co., Fort Smith, Arkansas.
205,679 The words: DUAL-RYTER, the letters becoming smaller towards the center—combination fountain pens and pencils. Nicholas Micucci doing business as Dual Ryter Co., Jersey City, New Jersey.

November 17, 1925, Act of February 20, 1905

205,701 SNOWFLAKE—dress shields. Marshall Field & Co., Chicago, Illinois.
205,737 The words: SUPREME STOUT enclosed in pennant—shoes of leather, rubber, fabric, etc. Nu-Way Shoe Co., New York, N. Y.
205,738 The word: LEFFTEX superimposed on a black blackground, the whole enclosed in a fanciful design—garters, hose supporters, etc. Leff Brothers Dry Goods & Notion Co., Houston, Texas.
205,877 A circle in the center of which is the representation of a bunch of poppies, above which are the words: POPPY BRAND—elastic cords, braids, galloons, etc. Budlong Manufacturing Co., Auburn, Rhode Island.
205,878 Double line pennant with the words: BLACK BEAUTY, in the center a circle with the letters: BB—pneumatic tire casings and tubes. The International Rubber Co. of America, Anderson, Indiana.

November 17, 1925, Act of March 19, 1920

205,977 The word: FIELDS, and under this in large numerals: $22.50, above which are the words: CLOTHES FOR MEN, and beneath the words: NO MORE NO LESS—raincoats, etc. Theodore Trivers, New York, N. Y.
205,979 GODCHAUX'S—leather, rubber and fabric shoes, garters, etc. The Leon Godchaux Clothing Co., Ltd., New Orleans, Louisiana.
205,984 PLASTER—tire patches. Virginia-Carolina Rubber Co., Inc., Richmond, Virginia.
205,987 The word: "HERFORD" surrounded by a fanciful circle—slickers, etc. John Wanamaker Philadelphia, Philadelphia, Pennsylvania.
205,988 "SURREY" superimposed on a darkened background—slickers, etc. John Wanamaker Philadelphia, Philadelphia, Pennsylvania.
205,989 REIGATE—slickers, etc. John Wanamaker Philadelphia, Philadelphia, Pennsylvania.
205,990 WOLVERHAMPTON—slickers, etc. John Wanamaker Philadelphia, Philadelphia, Pennsylvania.

205,991 ST. ALBANS enclosed in a wreath—slickers, etc. John Wanamaker Philadelphia, Philadelphia, Pennsylvania.

206,002 HOWE LOOP—suspender loops. Sweet-Orr & Co., Inc., Wappinger Falls and New York, N. Y.

November 24, 1925, Act of February 20, 1905

206,080 JINGELOON—toy balloons. Deubener's Shopping Bag, St. Paul, Minnesota.

206,230 STAGHOUND—automobile truck tires. Lee Rubber & Tire Corporation, New York, N. Y.

206,303 The word: "SCACO" through the center of which runs an oblong bearing the word: "SELCONCUSCO"—rubber air bags, cushions and seats. The Self-Controlled Air Cushion Co., Limited, Manchester, England.

November 24, 1925, Act of March 19, 1920

206,342 PETITE—hard rubber combs. American Hard Rubber Co., Hempstead and New York, N. Y.

December 1, 1925, Act of February 20, 1905

206,346 Representation of a black square on which are the words: WESTERN WELD—repair kits for repairing tires. Western States Manufacturing Co., Sioux City, Iowa.

December 1, 1925, Act of March 19, 1925

206,507 The word: HEREFORD enclosed in a circle—foot, hand, basket, tennis and golf balls. John Wanamaker Philadelphia, Philadelphia, Pennsylvania.

206,508 REIGATE—foot, hand, basket, tennis and golf balls. John Wanamaker Philadelphia, Philadelphia, Pennsylvania.

206,509 WOLVERHAMPTON—foot, hand, basket, tennis and golf balls. John Wanamaker, Philadelphia, Philadelphia, Pennsylvania.

206,510 The words: ST. ALBANS enclosed in a wreath—foot, hand, basket, tennis and golf balls. John Wanamaker Philadelphia, Philadelphia, Pennsylvania.

206,511 Representation of a loving cup above which is the word: TROPHY—baseballs, football and basket ball bladders, golf balls, etc. Shulman & Sons, New York, N. Y.

206,522 A diamond in which is the word: STIXTITE, the letters becoming larger at the center—cold and blow-out patches, etc. James R. Lawson, Dallas, Texas.

206,544 "SLIP NOT" with a conventional flower between the words—rubber shoes for ladders and trestles. William A. Lohlker, Pasadena, California.

206,545 The word: "SURREY" on a black background—foot, hand, basket, tennis and golf balls, etc. John Wanamaker Philadelphia, Philadelphia, Pennsylvania.

The Dominion of Canada

Registered

November 10, 1925

38,777 Word: "FARREL"—hydraulic rubber presses, calender, belt presses, refiners, etc., for rubber manufacture. Farrel Foundry & Machine Co., Ansonia, Connecticut, U. S. A.

38,813 Word: "VIMZIP"—physical exercising apparatus. Guy Campbell, 14 Clifford street, Bond street, London, W. 1, England.

November 17, 1925

38,848 Words: "THE FACTORY ADJUSTMENT TIRE COMPANY"; above and below these words are large English scrolls—factory adjustment tires. John Jennings Weston, Toronto, Ontario.

November 24, 1925

38,869 Words: "SERVUS RUBBER PRODUCTS"—rubber goods. Allen C. Anderson and Orrie H. Mason, both of Windsor, Ontario.

The United Kingdom

November 4, 1925

455,417 PROTEX—patches. Gerolamo Mussino, 116 bis, Rue de Tocqueville, Paris, France.

457,190 ERA—rubber and gutta percha goods. The Goodyear Tire & Rubber Co., Akron, Ohio, U. S. A.

458,921 KATTERPILLAR—tires. Edward Brice Killen, 27, Queen Victoria street, London, E. C. 4.

460,625 VERNIOMETER—all goods included in Class 8. The India Rubber, Gutta Percha & Telegraph Works Co., Ltd., 106, Cannon street, London, E. C. 4.

460,806 VULPRO—rubber and gutta percha goods for surgical and curative purposes. Vultex Products, Ltd., General Buildings, Aldwych, London, W. C. 2.

460,807 VULPRO—rubber and gutta percha goods. Vultex Products, Ltd., General Buildings, Aldwych, London, W. C. 2.

460,816 VULPRO—rubber sponge bags. Vultex Products, Ltd., General Buildings, Aldwych, London, W. C. 2.

460,924 RUBGRIP—manufactures from bitumen and clay for use in road making. Universal Rubber Paviors (Manchester, 1923), Ltd., Chatham Street Rubber Works, Canning street, Audenshaw, near Manchester.

462,249 TEAKRU—rubber tiles. John Broadfoot & Sons, Ltd., Inchholm Works, James street, Whiteinch, Glasgow.

462,726 MIDIMAC—rainproof and waterproof garments. Joshua Abrahams, trading as The Standard Weathercoat Co., Standard Works, Lyte street, Cambridge Heath, London, E. 2.

November 11, 1925

B458,621 Square with dark background, in one corner is a representation of a globe across which in white letters is the word: SPHERE, across the top is the word: BROADWAY, and in the center the word: GARTER, while in the lower corner in black letters is the word: COLOR—garters. Faire Brothers & Co., Ltd., 2, Southampton street, and St. George's Mills, Leicester.

November 18, 1925

457,256 The numerals: 1860, Russian letters: T. P. A. P. M. and Russian words meaning: ST. PETERSBURG enclosed in a triangle beneath which is the Russian word meaning: TRIANGLE—rubber boots and shoes. Société Française Treugolnik, 3 Rue Chauveau Lagarde, Paris, France.

457,258 Representation of a triangle beneath which are the words: "TRIANGLE" in Russian characters, "DREIECK," "TRIANGLE" and "TRIANGEL"—rubber boots and shoes. Société Française Treugolnik, 3 Rue Chauveau Lagarde, Paris, France.

457,259 Representation of a triangle beneath which are the words: "TRIANGLE" *in Russian characters*, "DREIECK," "TRIANGLE" and "TRIANGLE"—rubber and gutta percha goods. Société Française Treugolnik, 3 Rue Chauveau Lagarde, Paris, France.

461,404 Representation of a pyramid below which is the word: PYRAMID—wrist supports, belts, bandages, etc. J. Hardy Smith & Sons, Leadenhall Buildings, Belgrave Gate, Leicester.

461,685 A square containing at the top the monogram: "PT," in script through the center the words: "PEACHEY PROOF," and in the lower corner the words: "STORMPROOF," "GUARANTEED FOR THREE YEARS"—macintoshes. Peachey Textiles, Ltd., 83, Pall Mall, London, S. W. 1.

462,581 ATLAS—raw rubber. Henry Gardner & Co., Ltd., 2, Metal Exchange Buildings, Leadenhall street, London, E. C. 3.

November 25, 1925

459,841 Double line square containing the representation of a boy sitting with his feet spread out showing the soles of his shoes, above this the word: FAVORI—heels and soles. Favori, 44a, Goodge street, London, W. 1.

460,388 Representation of a cat standing on two legs above which is the word: FELIX—tire repair outfits. Pat Sullivan, 1947 Broadway, New York, N. Y., U. S. A.

460,713 CABTYRIT—rubber goods, not including heels, tips, pads, tires, etc., St. Helen's Cable & Rubber Co., Ltd., Trading Estate, Bath Road, Slough, Buckinghamshire.

461,292 GLIDE—golf balls, bags, clubs and tees. The Goodyear Tire & Rubber Co., 1144 East Market street, Akron, Ohio, U. S. A.

462,854 The word: ROYBIC in large black letters—rubber goods. Norman Crowther, 102, Bradford Road, Idle, Yorkshire.

New Zealand

October 22, 1925

22,093 NARM—boots and shoes. North Australian Rubber Mills, Ltd., Upper Melbourne street, South Brisbane, Queensland.

22,394 The word: HOLDTITE under which is the representation of a bench vise—friction tape. United States Rubber Co., New York, N. Y., U. S. A.

22,707 Triangle enclosing the letter: A and numerals: 19, these in turn being enclosed in another triangle, the three sides of which contain the words: RUBBER SERVICE LABORATORIES—compound used in curing rubber articles. The Rubber Service Laboratories Co., Akron, Ohio, U. S. A.

Designs

The United States

68,714 Resilient tire. Term 14 years. Robert Iredell, assignor to The General Tire & Rubber Co., both of Akron, Ohio.

68,725 Rubber heel. Term 3½ years. Elijah McCoy, assignor of one-half to George W. Jones, and one-half to C. J. Broner, all of Detroit, Michigan.

68,750 Resilient tire. Term 14 years. Paul Worth, Akron, assignor to The India Tire & Rubber Co., Mogadore, both in Ohio.

68,765 Tire. Term 14 years. Edward H. Broadwell, Longmeadow, assignor to The Fisk Rubber Co., Chicopee Falls, both in Massachusetts.

68,803 Bathing cap. Term 7 years. George K. Guinzburg, assignor to I. B. Kleinert Rubber Co., both of New York, N. Y.

68,822 Garter. Term 3½ years. Charles B. Namiot, New York, N. Y.

68,840 Tire tread. Term 14 years. William S. Wolfe, Akron, Ohio.

The Dominion of Canada

6,934 Suspender. Arrow Garter Manufacturing Co., Montreal, Quebec.

6,942 Tire tread. Charles Escher, Jersey City, New Jersey, U. S. A.

6,945 Baby's rubber diaper. Kelton Rubber Co., Toronto, Ontario.

Germany

919,086 (July 8, 1925). Pneumatic cushioning in tube form in which pure rubber is used. A. Benndorf & Co., G. m. b. H., Leipzig-Plagwitz.

919,163 (June 23, 1925). Dice cup. Mittelland-Gummiwerke A.-G., Hannover-Linden.

919,260 (February 24, 1925). Solid rubber tire with rounded depressions alternately arranged. Franz Clouth, Rheinische Gummiwarenfabrik, A.-G., Köln-Nippes.

919,261 (April 22, 1925). Mosaic floor covering consisting of rubber pieces held together by a homogeneous bottom layer. Hugo Schröder, Mengede.

919,294 (June 29, 1925). Eraser in the shape of a cap that can be slipped over the end of pen or pencil. Weill & Reineke, Hamburg.

919,422 (July 7, 1925). Rubber sanitary bandage. August Kibele & Co., Weissenfels a. d. S.

919,500 (June 11, 1925). Sanitary binder. Krimmel & Cie, Reutlingen.

919,569 (July 1, 1925). Comb with teeth arranged on both sides of the back. Dr. Heinrich Traun & Sohne, vormals Harburger Gummi-Kamm-Co., Hamburg.

919,632 (July 1, 1925). Comb in the shape of a rake. Dr. Heinrich Traun & Söhne, vormals Harburger Gummi-Kamm-Co., Hamburg.

919,639 (July 4, 1925). Knap sack cushion. Phil. Penin, Gummiwarenfabrik, A.-G., Leipzig-Plagwitz.

919,705 (July 8, 1925). Rubber heel. Norddeutsche Gummiwarenfabrik Hannover, G. m. b. H., Hannover-Döhren.

919,722 (July 13, 1925). Sanitary binder. Josef Leyers, Ascheberg.

919,750 (May 12, 1925). Hairdresser's comb with waved teeth. Rheinische Gummi- und Celluloid-Fabrik, Mannheim-Neckarau.

919,760 (June 25, 1925). Ruler of soft rubber. Hermann Bade, Hornemannstrasse 4, Hildesheim.

919,960 (July 24, 1925). Sanitary garment. Lilli Hecker, née Berger, Eichstätt.

920,006 (July 15, 1925). Rubber heel patch. Margarete Thalwitzer, née Nitzsche, Wasserturmstrasse 38, Leipzig-Stötteritz.

920,087 (July 20, 1925). Nipple for feeding bottles. Ohse & Monscheuer Nachf. Bartels & Rieger, Cologne.

920,134 (July 20, 1925). Hot water bottle. Harburger Gummiwarenfabrik Phoenix A.-G., Harburg a. d. Elbe.

920,166 (July 24, 1925). Pneumatic nipple. Wilhelm Pichmann, Sybelstrasse 42, Charlottenburg.

920,327 (January 21, 1925). Insert for tire valve. Continental-Caoutchouc und Gutta-Percha-Compagnie, Hannover.

920,329 (April 17, 1925). Inflatable rubber toy flying machine. Oswald Meinecke, Hohestrasse 145, Cologne.

920,446 (July 20, 1925). Rubber sole. Hansa Gummi- und Schuhartikel G. m. b. H., Munich.

920,523 (July 24, 1925). Inflatable rubber floating animal. Harburger Gummiwarenfabrik Phoenix A.-G., Harburg a. d. Elbe.

920,638 (July 8, 1925). Game consisting of daggers and rubber rings. Louis Schieffer, Karlstrasse 23, Köln-Deutz.

920,641 (July 11, 1925). Seamless sport knee-cap of rubber. A. Benndorf & Co., G. m. b. H., Leipzig-Plagwitz.

920,991 (July 22, 1925). Rubber heel protector. Louis Bastian. Fuhlsbüttelerstrasse 715, Hamburg-Ohlsdorf.

921,050 (July 13, 1925). Closed foot bandage of elastic webbing. Joseph May, Hermannstrasse 41, Frankfurt-am-Main.

921,116 (June 18, 1925). Rubber squirting ball. Sachsland Gummiwarenfabrik Friedrich Herrmann, Bürgel, Thuringia.

921,119 (June 26, 1925). Rubber squirting ball for powders. Sachsland Gummiwarenfabrik Friedrich Herrmann, Bürgel, Thuringia.

921,148 (July 30, 1925). Tube without valve for bicycles or the like. Paul Friedrich, Kastanienallee 101, Berlin.

921,294 (July 24, 1925). Rubber heel. Wilhelm Alberts Jr., Werther-strasse 5, Barmen.

921,350 (July 23, 1925). Rubber bag for bathing-suit and other purposes. Karl Kirsten, Hessenstrasse 26, Hamburg.

921,425 (August 4, 1925). Rubber heel measure. Richard Gebhardt, Gesundbrunnenstrasse 13, Augsburg.

921,438 (August 7, 1925). Washable hair bow of rubberized fabric. Therese Blayer, Stärzenbach 3, Regensburg.

921,659 (August 7, 1925). Rubber base for furniture legs. Robert Schmidt, Königstrasse 25, Lubeck.

921,717 (July 27, 1925). Rubber lamp shade. Otto Sutheim, Hasselbrookstrasse 15, Hamburg.

921,727 (August 8, 1925). Rubber sponge with inlaid letters. Belinde-Werke A.-G., Wandsbek.

921,960 (August 17, 1925). Bathing slipper. Harburger Gummiwaren-Fabrik Phoenix A.-G., Harburg a. d. E.

922,047 (July 29, 1925). Apron with pleated shoulder bands. Gummiwaren-Fabrik M. Steinberg, Köln-Lindenthal.

922,072 (August 15, 1925). Rubber cudgel. Metzeler & Co., A.-G., Munich.

922,253 (July 28, 1925). Bathing cap with inflatable air tube. Dr. Albert Rosenburg, Mannheim L. 14, 14.

922,265 (August 14, 1925). Rubber cone. Rheinische Gummigesellschaft W. Klotz & Co., Düsseldorf.

922,318 (July 29, 1925). Fabric shoe. Friedrich Theilmann G. m. b. H., Frankfurt-am-Main-Niederrad.

922,329 (August 8, 1925). Exchangeable rubber tread patch for heels. Walter Giene, Wettinerstrasse 36, Halle a. d. S.

922,364 (August 22, 1925). Tread for giant pneumatic tire. Deutsche Dunlop Gummi-Compagnie A.-G., Hanau-am-Main.

922,365 (August 22, 1925). Pneumatic tire tread. Deutsche Dunlop Gummi-Compagnie A.-G., Hanau a. M.

922,482 (August 19, 1925). Power transmission disk. Gummiwerk Ernst Kniepert, Löbau i. Sa.

922,591 (August 21, 1924). Rubber matting. Johann Appel, Leimen b. Heidelberg.

922,745 (May 15, 1923). Vehicle wheel with pneumatic tire. Charles Kingston Welch, Coventry, Warwick, England; represented by R. H. Korn, Berlin S. W. 11.

922,844 (August 20, 1925). Dress shield. Gummiwaren-Fabrik M. Steinberg, Köln-Lindenthal.

923,034 (July 28, 1925). Exchangeable rubber heel. Reinholf Hendrich. Nordhausen a. H.

923,079 (February 21, 1925). Rubber cover with self-acting valve for footballs. Ludwig Höschele, Schwenningen a. N.

923,098 (July 2, 1925). Collapsible toy ball. Bertha Amalie Elsa Hartmann, née Müller, Bergstrasse 78, Dresden.

923,150 (February 20, 1925). Rubber sheet. Gotthold Strobel, Reichsburgstrasse 8, Frankfurt-am-Main—Rödelheim.

923,391 (August 26, 1925). Rubber hand-protector for tools. Johann Nikolaus Emich, Muhle, Post Rummenohl i. W.

923,535 (August 5, 1925). Hard rubber rod. Gummiwerk Ernst Kniepert, Löbau i. S.

923,678 (July 27, 1925). Bust confiner with exchangeable rubber insert. Lauckner & Co., Olbernhau-Grünthal.

923,815 (July 21, 1925). Rubber holder for pots. Ernst Bremer, Engelbosteler Damm 74, Hannover.

923,917 (August 31, 1925). Truck tire with exchangeable caulks. Ernst Hubold, Düsseldorferstrasse 49, Berlin.

924,240 (September 7, 1925). Tube protector. Alfons Müller, Talheim b. Heilbronn a. N.

924,298 (September 3, 1925). Insole of expanded rubber. A. Sachs. Söhne, Berlin.

924,377 (September 3, 1925). Link block belt. Continental-Caoutchouc- und Gutta-Percha-Compagnie, Hannover.

924,385 (September 4, 1925). Pneumatic tire. Roch Ponsard, Soy, Luxemburg. Represented by Dr. S. Hauser, Berlin S. W. 48.

924,438 (August 18, 1925). Rubber closing band for ski trousers. Alexander Rudolf Kopprasch, Alaunstrasse 87, Dresden.

Labels

The United States

29,216 NEW DAISY SINK STOPPER—sink steppers. Schacht Rubber Manufacturing Co., Huntington, Indiana. Published June 1, 1925.

29,265 SANTRO BOTTLE NIPPLES—transparent rubber nipples. Julius Schmid, Inc., New York, N. Y. Published July 20, 1925.

29,266 SANTRO PACIFIERS—rubber pacifiers. Julius Schmid, Inc., New York, N. Y. Published July 20, 1925.

29,267 SANTRO BOTTLE NIPPLES—transparent nipples. Julius Schmid, Inc., New York, N. Y. Published July 20, 1925.

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8,317 TUBAN TYRE. For tires and tubes. Jack R. Young, Marysville, California. Published September 5, 1924.

8,333 THE BEST TIRE BUY ON THE MARKET GOOD—WINGFOOT—YEAR BALLOONS Tires. The Goodyear Tire & Rubber Co., Inc., Akron, Ohio. Published September 15, 1925.

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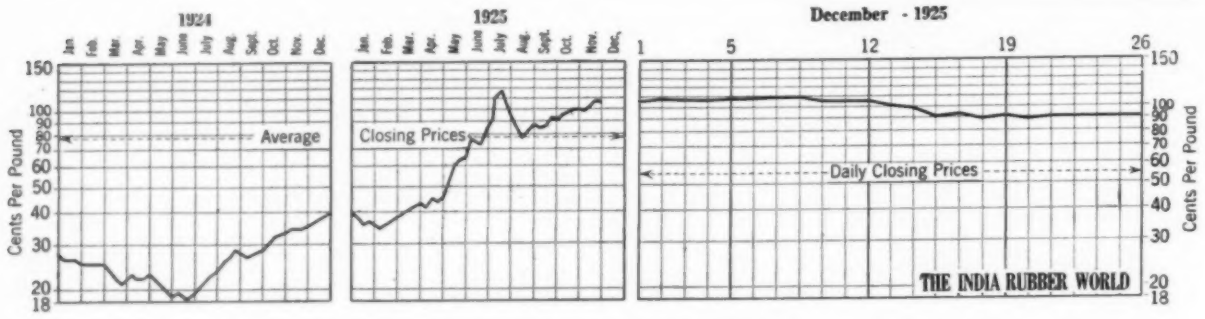


Ratio Graph of New York Closing Prices of Spot Ribbed Smoked Sheets

Review of the Crude Rubber Market

New York

THE market on spot ribbed smoked sheets closed on December 1 at $1.06¾ and rose within a week to $1.09¼. From that level it fell off in a steady decline to 88¾ cents on December 24. All other grades and positions were similarly affected. In general this decline was due to the liquidation by London speculative interests on the long side; the development of a more comfortable position on the part of large American consumers who provided in November for their early 1926 requirements; the approach of the holidays and yearly inventory season. Knowledge that the recruiting of plantation labor is progressing at a good rate in preparation for production of full standard output also had its influence. These factors have effectually removed from consumers the fear of a runaway market.

During the first week of December buyers were lacking at the start and with increase of interest ribs advanced. The week closed more active with prices firmer, ribs being quoted at $1.09 buyers, $1.10 sellers. The next week the market was firmer and more active. The factory interests bought reluctantly and within a couple of days withdrew from the market. This lack of support caused a sharp drop in values, the net recession of the week on ribs being from $1.07 buyers, $1.08 sellers, on December 7 to $1.03½ buyers, $1.04½ sellers, on December 12. The following week prices sagged from the start. Factory buying was scattering awaiting developments. Eastern markets held firm with few offers. Heavy selling by London speculative interests depressed New York prices on all grades. The decline of spot ribbed smoked sheets for the week was 13½ cents. The quotations on December 14 being, $1.01½ buyers, $1.02½ sellers and on December 19, 88 cents buyers, 89 cents sellers. The week closed without buying or trading interest in either New York or London for the last two days.

Christmas week the market was in session but four days. It opened without interest and was very dull and quiet with very little movement in prices. The closing prices ranged from 88¼ to 88¾ cents for spot ribs with little buying interest. First latex crêpe was at a premium of one cent over ribs throughout the past month.

The statistical position of rubber as the year closed is seen to be considerably improved. The 1926 consumption of the United States is estimated at 385,000 tons. From November 1 to February 1 plantation exports will remain at 85 per cent of standard production and it has already been announced that on February 1 the remaining 15 per cent restriction will be removed and full standard production be allowed. The Stevenson plan will still continue in effect, however, and further increase of production can come only by advancing the tonnage of standard production. Even on the present standard the world's production is practically equal to world consumption. This fact together with the heavy increase in the use of reclaimed rubber and other substitutes and the general conservation of rubber by manufacturers will go far to reduce the shortage of crude rubber generally feared for 1926.

Parás moved throughout the month in sympathy with plantation grades. Balatas were rather neglected.

Importations of all grades in November were 36,050 tons, compared with 28,660 tons one year ago. Plantation arrivals for November were 33,066 tons, compared with 26,427 tons one year ago. Total importations of plantation rubber for eleven months ended November 30, were 320,760 tons, compared with 272,460 tons for the corresponding period of 1924. Total importations

New York Spot Closing Rubber Prices

PLANTATIONS	PRICES IN CENTS, PER POUND																					
	November, 1925						December, 1925															
Sheet	24	25	26	27	28	30	1	2	3	4	5	7	8	9	10	11	12	14	15	16	17	18	19
Ribbed smoked	109	106¼	..	108¼	108½	107	106¾	108½	107¾	107¾	108¼	108	109	109¼	106	105½	105½	101	99¼	90¼	93	88¾	86¾
Crêpe																							
First latex	109	106¼	H	108½	108½	107½	107¼	109	108½	108¾	108¼	108½	109	109¼	106	105¾	105½	101	99¼	91	93½	88½	87½
No. 2 blanket	105	102½	O	104¾	105¼	105	103¾	105	103¾	104	104¼	104½	105	105	102¼	101¾	102	97½	96	88¾	89½	86¾	84¾
No. 3 blanket	104	101½	L	103¾	103¾	104	102¾	103¾	103	103	103¼	103½	104	104¾	101¼	100¾	101	96½	94¾	87¼	88½	85¼	83¾
No. 4 blanket	102	99½	I	102	101¾	101½	101½	102½	101¼	101	101¼	101	103	103	99	99¾	99	95	93¾	85¾	87½	83½	82¾
Thin, clean brown	104¾	100½	D	104	104¾	103	102¾	104	103	103	103¼	103½	104	104	101¾	100½	101	97	95	86¾	89½	85¼	83¼
Rolled brown	99	96½	A	101¼	100¾	100	99½	101	100	98	98¼	96½	98¼	98½	96¾	96¼	96½	94	93	84¼	84¾	81½	81¼
Off latex	107	105	Y	106¼	106¼	103	105¾	107	106	106¾	107½	107½	107½	107¼	104¾	104¼	104½	100	97¾	89¾	92¾	87½	85¾

of all grades of rubber for the eleven months ended November 30, 1925, were 345,318 tons, compared with 289,678 tons for the corresponding period of last year.

London

It seems to be the intention of the Colonial office to continue restriction of exportation and future increases will probably only arise from the revision of standard production which is to take place November 1 of each year. The figure for the current year for Malaya, commencing November 1, is likely to be about 280,000 tons and for Ceylon 70,000 tons.

London stock shows a gain of 1,749 tons in the report of December 28 over that of November 27. The weekly record was as follows: November 27, 3,797 tons; December 7, 3,830 tons; December 14, 4,453 tons; December 21, 5,402 tons; December 28, 5,546 tons.

Singapore

The month began with good demand but it soon became irregular, and the price declined on profit taking and London speculative selling. Interest was confined chiefly to crêpe and amber grades. Business continued rather slack in the week before the holidays owing to weak London and New York cables. During the holiday week prices rose to 42½ pence based on a rally in the London market and new c. i. f. 1926 business. The month closed quiet after poor auction sales.

Comparative Low and High New York Spot Rubber Prices

	December		
PLANTATIONS	1925*	1924	1923
First latex crêpe	$0.89@$1.10	$0.35⅝@$0.39¼	$0.26⅜@$0.27¼
Smoked sheet, ribbed	.88@ 1.10	.35¾@ .39⅝	.26¼@ .27¼
PARAS			
Upriver, fine	.79 @ 1.04	.33½@ .39⅛	.21¾@ .23½
Upriver, coarse	.57 @ .76½	.23¾@ .29	.18 @ .19
Islands, fine	.65 @ .85	.29¼@ .33¾	.19 @ .20½
Islands, coarse			.11 @ .11¾
Cametá	.40 @ .48½	.18¼@ .20½	10¾@ .12¾

*Figured to December 24, 1925.

British Malaya

Rubber Exports

An official cablegram from Singapore to the Malay States Information Agency, 88 Cannon street, London, E. C. 4, England, states that the amount of rubber exported from British Malaya in the month of October last totaled 31,648 tons. The amount of rubber imported was 14,904 tons, of which 12,449 tons were declared as wet rubber. The following are comparative statistics:

	1924		1925	
	Gross Exports Tons	Foreign Imports Tons	Gross Exports Tons	Foreign Imports Tons
January	23,844	8,867	19,183	10,132
February	19,395	7,440	21,622	10,071
March	22,294	8,269	26,836	13,399
April	20,551	7,909	22,414	11,750
May	19,674	7,259	26,667	12,979
June	18,084	7,435	27,894	14,706
July	21,670	9,777	24,809	16,192
August	22,133	9,776	27,753	12,025
September	25,127	9,291	29,425	12,913
October	20,270	9,981	28,711	14,986
November	22,488	9,617	31,648	14,904
Totals	235,530	95,621	286,962	144,057

Distribution

The following is a comparative return of distribution of shipments during the months of October and November, 1925:

DESTINATION	October, 1925 Tons	November, 1925 Tons
United Kingdom	4,063	6,031
U. S. of A.	20,184	21,645
Continent of Europe	2,552	1,967
British Possessions	342	563
Japan	1,564	1,423
Other foreign countries	6	19
Totals	28,711	31,648

Dealers' Stocks of Rubber

An official cablegram from Singapore to the Malay States Information Agency, 88 Cannon street, London, E. C. 4, England, states that dealers stocks of rubber on October 31, 1925, were in Singapore 13,897 tons, and in Penang 1,449 tons.

New York Quotations

Following are the New York spot and future rubber quotations, for one year ago, one month ago, and December 24, the current date:

Plantation Hevea	December 24, 1924	November 24, 1925	December 24, 1925
Rubber latex (Hevea)..gal.	$1.30 @	$3.66 @	$3.00 @
CREPE			
First latex, spot	.39⅛@	1.13 @1.14	.89 @.90
Dec.	@	1.11 @1.12	.88 @.89
Jan.-March	.39¼@	1.10 @1.12	.85 @.86
Apr.-June	.39 @	1.05 @1.06	.80 @.82
Off latex, spot	@	1.03 @1.04	@
Amber No. 2, spot	.38¾@	1.08 @1.09	.86 @
Dec.	@	1.07 @1.08	.85 @
Jan.-March	.38⅝@	1.08 @1.10	.85¼@
Apr.-June	.35⅝@	1.03 @1.04	.81 @
Amber No. 3 spot	.38½@	1.07 @1.08	.84 @
Brown, thin, clean	.38½@.38¾	1.07 @1.08	.85 @
Brown, specky	.38 @	1.05 @1.06	.83 @
Brown, roll	.36½@	1.04 @	.81 @
Sole crêpe	.42 @.45	1.16 @	1.08 @
SHEET			
Ribbed, smoked, spot	.39⅛@	1.12 @1.13	.89 @.90
Dec.	@	1.09 @1.10	.89 @
Jan.-March	.38¾@	1.10 @1.10½	.85 @.86
Apr.-June	.38½@	1.05 @1.06	.80 @.82
East Indian			
PONTIANAK			
Banjermassin	.08 @	@ .16	.22 @
Palembang	.08½@	@	.22 @
Pressed block	.13½	@ .30	.33 @.34
Sarawak	.08 @	@ .16	.22 @
South American			
PARAS			
Upriver, fine	.36 @	1.01 @1.02	.82 @
Upriver, fine	*.50 @	*1.26 @	*.99 @
Upriver, medium	.34 @	.95 @ .96	.76 @
Upriver, coarse	.29 @	.76 @ .77	.64 @
Upriver, coarse	*.41 @	*.97 @	*.85 @
Islands, fine	.33¾@	.81 @ .82	.68 @
Islands, fine	@	*1.12 @	*.95 @
Cametá	.19 @	@	@
Acre, Bolivian, fine	.36½@	1.02 @1.03	.83 @
Acre, Bolivian, fine	*.50½@	*1.28 @	*1.00 @
Beni Bolivian	@	1.02 @1.03	.83 @
Madeira	.36½@	1.02 @1.03	.84 @
Peruvian, fine	.35½@	.98 @ .99	.80 @
Tapajos, fine	.34½@	@	.69 @
CAUCHO			
Upper caucho ball	.29 @	.78 @ .79	.65 @
Upper caucho ball	*.41 @	*.98 @	*.87 @
Lower caucho ball	.27½@	.75 @	.60 @
Manicobas			
Ceará negro heads	.27 @	.60 @	†.60 @
Ceará scrap	.18 @	.35 @	†.35 @
Manicobas 30% guaranty	.26 @	.55 @	.58 @
Mangabeira, thin sheet	.29 @	.48 @	.55 @
Centrals			
Central scrap	@	.75 @	.56 @
Central wet sheet	@	.62 @	.48 @
Corinto scrap	@	.75 @	.56 @
Esmeralda sausage	@	.75 @	.56 @
Guayule washed and dried	.31 @	.78 @	.74 @
Africans			
Black Kasai	.28 @	@ .85	.70 @
Black Upper Congo	.28 @	@ .82	.68 @
Red Upper Congo	.27 @	@ .78	.65 @
Kasai Loanda	@	@	@
Upper Congo Arumini	@	@	@
Masai (Konakry)	@	@	@
Gutta Percha			
Gutta Siak	.18½@	.31 @	.37 @
Gutta Soh	.28 @	.30 @	.30 @
Red Macassar	3.25 @	3.00 @	3.00 @3.50
Balata			
Block Ciudad Bolivar	.61½@	.65 @	.64 @
Colombia	.51 @	.56 @	.53 @
Panama	.51 @	@	.52 @
Surinam, sheet	.76 @	.76 @	.73 @
amber	.79 @	.82 @	.80 @
Chicle			
Honduras	‡.58 @ .68	‡.54 @	‡.54 @
Yucatan	‡.58 @ .68	‡.55 @	‡.55 @

*Washed and dried crêpe. Shipment from Brazil.
†Nominal. ‡Duty paid.

Reclaimed Rubber

New York

The crude rubber price incentive for rubber manufacturers to use reclaims to greater degree is undiminished. Every reclaimer is back ordered on his output by several weeks if not by months on some grades. In many instances they have installed additional equipment and are endeavoring to supply the demands of customers. If the present rate of increase continues as now indicated, the tonnage of reclaim used in 1926 will probably be about double that of the past year.

The prices for most standard grades have not advanced very much. High tensile blacks moved up 1 to 2 cents a pound. Uncured frictions fell back the same amount. The greatest advances in the list were 5½ cents for white auto tire and 4½ cents for high grade red. This was due to the upward movement of the scrap for these grades.

New York Quotations

December 26, 1925

	Specific Gravities	Price Per Pound
Auto Tire		
Black	1.21	$0.11½ @ $0.11¾
Black, washed	1.18	.12¾ @ .13
Black selected tires	1.20	.13 @ .13½
Dark gray	1.35	.16½ @ .17
Light gray	1.38	.18½ @ .19
White	1.40	.24½ @ .25½
High Tensile Black		
Super-reclaim, No. 1	1.20	.35 @ .36
No. 2	1.20	.21 @ .22
Shoe		
Unwashed	1.60	.10¾ @ .11¼
Washed	1.50	.13¾ @ .14¼
Tube		
No. 1	1.00	.30 @ .31
No. 2	1.18	.21 @ .22
Uncured Tire Friction		
No. 1	1.00	.68 @ .72
No. 2	1.20	.52 @ .55
Miscellaneous		
High grade, red	1.35	.23½ @ .24½
Truck tire, heavy gravity	1.40	.11 @ .11½
Truck tire, light gravity	1.55	.11½ @ .12
Mechanical blends	1.60	.09 @ .10

MEXICO'S NEW RUBBER FACTORY

The rubber factory recently established in the City of Mexico and known as Compañia Hulera El Popo, S. A., has, since it began operations early in November, been manufacturing 500 inner tubes a day, while by the middle of December the daily output also included 200 tires. The plant is equipped with modern machinery and is prepared to turn out also waterproof clothing, soles and heels, and other rubber articles. In this production the company plans to utilize as far as possible the native castilloa and guayule rubber.

The officers of the new concern are: President, Roberto Cruz; vice-president, Ignacio Soto; treasurer. Epigmenio Ibarra, Jr.; managing director, Ramon D. Cruz; and general manager, S. B. de Reachi.

AMERICAN EXPORTS OF HARD RUBBER GOODS INCREASE

United States exports of hard rubber goods, particularly for electrical uses, have almost doubled in quantity during the first ten months of 1925 as compared with the corresponding period of 1924. The 1925 figures are: 892,047 pounds, value $263,473; and for 1924, 453,087 pounds, value $181,067. Shipments during the 1925 period of other hard rubber goods totaled 509,676 pounds, value $511,352; the 1924 figures being 369,043 pounds, value $448,121.

The Market for Rubber Scrap

New York

The scrap rubber market for December showed marked activity which decreased as the month progressed to the usual pre-holiday quiet. Renewal of active buying will doubtless appear after the turn of the year. Prices of all grades have declined particularly on the less active stocks.

There is practically no export demand owing largely to credit conditions especially in Germany.

BOOTS AND SHOES. The demand was unusually light throughout the month.

INNER TUBES. Trade has been very conservative at prices for the most part little changed from those of a month ago.

MIXED TIRES. Mixed tires moved quite steadily in moderate quantities. Reclaimers are buying steadily and conservatively. The supplies of scrap tires are very large and the demand is sufficient to maintain prices at a fair level.

TRUCK TIRES. There has been much activity in truck tire scrap, and prices have advanced $2.00 a ton.

AIR-BRAKE HOSE AND MECHANICALS. Prices are firm and demand light.

Quotations for Carload Lots

December 26, 1925

Boots and Shoes			
Boots and shoes, black	lb.	$0.02¼ @	$0.03
Red and white	lb.	.01¾ @	.02
Trimmed arctics, black	lb.	.02 @	.02⅛
Untrimmed arctics	lb.	.01⅝ @	.01¾
Tennis shoes and soles	lb.	.01⅞ @	.01¾
Hard Rubber			
No. 1 hard rubber	lb.	.10 @	.12
Battery jars, black compound	lb.	.02¼ @	.02½
Inner Tubes			
No. 1, floating	lb.	.12¼ @	.13¾
No. 2, compounded	lb.	.09¼ @	.10
Red	lb.	.08 @	.08¼
Mixed tubes	lb.	.08½ @	.09
Mechanicals			
Mixed black scrap	lb.	.01¼ @	.01½
Heels	lb.	.01 @	.01⅛
Hose, air-brake	ton	26.00	@28.00
regular	ton	20.00	@21.00
No. 1 red	lb.	.03⅛ @	.03¼
No. 2 red	lb.	.01⅝ @	.02¼
Red packing	lb.	.01⅜ @	.01½
White, druggists' sundries	lb.	.03⅞ @	.04
Mechanical	lb.	.02¼ @	.03¾
Tires			
Pneumatic Standard—			
Mixed auto tires with beads	ton	28.00	@29.00
Beadless	ton	40.00	@41.00
White auto tires with beads	ton	43.00	@46.00
Beadless	ton	65.00	@67.00
Mixed auto peelings	ton	40.00	@42.00
Solid—			
Mixed motor truck, clean	ton	52.00	@55.00

SCRAP TIRE AND TUBE RATES INCREASED

The rate on scrap tires of 60 cents per one hundred pounds, as shipped from all Pacific Coast ports to all Atlantic Coast ports via steamship lines operating through the Panama Canal, has been increased approximately 10 per cent, with few exceptions. The new rate of 65 cents per one hundred pounds, any quantity, becomes effective January 1, 1926.

CARLOAD MINIMUM WEIGHT OF SCRAP RUBBER

The Southern Railway has filed with the Southern Freight Association a proposal for authority to change the carload minimum weight on scrap rubber from 40,000 pounds to 30,000 pounds. This ruling would apply to shipments from Carolina and southeastern points to eastern Virginia cities and Ohio and Mississippi River crossings.

The Market for Chemicals and Compounding Ingredients

New York

THE movement of the general list of standard ingredients for current consumption continues in heavy volume. This is particularly so in reinforcing materials on the one hand and cheap fillers on the other, due to the necessity of compounding crude rubber for economy and cost. A general upward tendency underlies material prices.

ACCELERATORS. Among the many organic accelerators offered the high powered ones and such as are specially adapted for use with reclaims are in increasing demand.

ANILINE. As an accelerator of medium power aniline is sought in routine quantities at reasonable prices. The market has held steady the past month.

BENZOL. The market for the 90 per cent grade has been very vigorous. The price has held firm in view of the demand.

CLAY. The position of clay is fortunate at the present time since it is usable both as a reinforcing material and a filler. The increasing tonnage required by rubber manufacturers has caused one important producer to enlarge his shipping facilities to meet the bigger volume of business.

CARBON BLACK. Restrictions in conservation of natural gas in Louisiana have caused producers of carbon black to advance the price 1 cent a pound. Contracts are now being booked at the new levels for the first half of 1926. Spot prices advanced correspondingly.

LITHARGE. All producers are now offering litharge at the same level. There is a fair spot stock movement and prices are guaranteed against a decline.

LITHOPONE. One producer advanced the price ½ cent a pound, but this increase has not been made by others as yet.

MINERAL RUBBER. Manufacturers of this popular substitute and plasticizer have developed their facilities to handle the heavily increased need of the rubber trade.

SOLVENT NAPHTHA. Early in November the price was increased by 5 cents a gallon. The market is firm. Spot stocks are well sold up. The material is scarce and production is sold ahead.

THERMATOMIC CARBON. This material has rapidly become a standard ingredient in rubber for tires, tubes, footwear, frictions and mechanicals. The price was advanced 1 cent a pound in November.

ZINC OXIDE. This pigment is active in all grades. The tire demand is particularly strong at this time for delivery in the first quarter of 1926. Spot business is somewhat quiet. Prices are firm.

New York Quotations

December 26, 1925

Accelerators, Inorganic			
Lead, carbonate	lb.	$0.10¾	@
Lead, red	lb.	.12¾	@
sublimed blue	lb.	.10	@
sublimed white	lb.	.10	@
Lime	ton	28.00	@40.00
R. M. hydrated	ton	15.00	@
Litharge	lb.	.11¾	@
Magnesia, carbonate (fact'y)	lb	.06½	@ .07½
calcined, light (bbls.)	lb.	.24	@ .25
calcined, md. light (bbls.)	lb.	.15	@
calcined, extra light (bbls.)	lb.	.40	@
calcined, heavy (bbls.)	lb.	.04½	@
magnesium, carb., light (bags)	lb.	.06½	@ .06¾
Orange mineral A.A.A.	lb.	.14½	@
Rubber lead No. 4	lb.	.30	@
Accelerators, Organic			
A-7	lb.	.75	@ .85
A-19	lb.	.85	@ .95
Aldehyde ammonia	lb.	.93	@ .95
Aniline (factory)	lb.	.17	@ .17½
B. B	lb.	1.05	@ 1.07
Benzidine (base)	lb.	.75	@ .78
Crylene	lb.	.70	@
Paste	lb.	.50	@
D. P. G. salt	lb.	.89	@
Diethyl amine	lb.	2.15	@
Dimethyl amine	lb.	2.80	@
Dimethylaniline	lb.	.58	@ .60
Di-ortho-toylguarndine	lb.	1.13	@
Di-ortho-tolylthiourea	lb.		@
Diphenyl guanidine	lb.	.98	@
Ethyl aniline	lb.	1.15	@
Ethylidene aniline	lb.	.65	@
Ethyl-o-toluidine	lb	1.10	@
Excellerex	lb	.40	@ .45
Formaldehyde aniline	lb.	.42	@
Grasselerator 808	lb.	1.50	@
Heptene	lb.	.55	@
Hexamethylene tetramine	lb.	.80	@ .82½
Lead oleate (fact'y)	lb.	.18	@
Methylene aniline	lb.	.30	@ .40
Methylenedianilide	lb.		@
Monex	lb.	4.00	@ 5.00
No. 999	lb.	.17½	@
No. 552 Piperidine piperidyl-dithio-carbamate	lb.	4.80	@ 5.00
Para-nitrosodimethylaniline	lb		@
Paraphenylene diamine	lb		@
Quinodine	lb.	.40	@
Shawinigan paraldehyde	lb.		@
Super-sulphur, No. 1	lb.	.50	@
No. 2	lb.	.18	@ .25
Tensilac No. 41	lb.	.65	@
Thiocarbanilide	lb.	.24	@ .32
Trimene	lb.	.75	@
Trimene base	lb.	$1.23	@ $1.35
Triphenylguanidine	lb.	.70	@ .75
Tuads	lb.	4.50	@ 5.00
Vulcone	lb.		@
Zimate	lb.	5.00	@
Acids			
Acetic 28% (bbls.)	100 lb.	$3.38	@
glacial (carboys)	lb.	.16	@
Oleic (bbls.)	lb.	.11	@ .12
Cresylic (97% straw color)	gal.	.55	@ .60
(95% dark)	gal.	.55	@ .60
Sulphuric, 66° (carboys)	lb.	.02	@
Alkalies			
Caustic soda	100 lbs.	3.10	@ 4.75
flake, 76% (factory)	100 lbs.	3.45	@
solid, 76% (factory)	100 lbs.	3.10	@
Anti Oxidants			
V. G. B.	lb.	.70	@
Colors			
BLACK			
Bone	lb.	.05½	@ .11
Carbon:			
A. & W. nonfl.	lb.	.40	@
Aerfloted arrow	lb.	.09	@ .13
Compressed	lb.	.08	@ .13
Uncompressed	lb.	.08	@ .12½
Micronex	lb.	.09½	@ .13½
Drop	lb.	.06	@ .10
Lampblack	lb.	.12	@ .14
Shawinigan	lb.		@
Thermatomic carbon	lb.	.05	@
BLUE			
A. & W. blue	lb.	2.00	@
Prussian	lb.	.34	@ .35
Ultramarine	lb.	.08	@ .35
BROWN			
Sienna, Italian	lb.	06½	@ .07½
Umber, Turkey	lb.	.04	@ .06
GREEN			
A. & W. green	lb.	$2.00	@
Chrome, light	lb.	.28	@ .30
medium	lb.	.30	@ .32
dark	lb.	.31	@ .34
commercial	lb.	.09	@ .10
Oxide of chromium	lb.	.32	@ .38
T. K.	lb.	.35	@ .40
RED			
Antimony, golden	lb.	$0.16	@
golden T. K.	lb.	.18	@ .21
pentasulphide	lb.	.33	@ .35
golden R.M.P. No. 7	lb.	.25	@
golden 15/17 % G. E.	lb.	.26	@ .30
Antimony, sulph. crimson	lb.	.27	@
crimson T. K., 15/17%	lb.	.40	@ .43
crimson T. K., S/F	lb.	.48	@ .50
crimson, 15/17% G. E.	lb	.42	@ .45
crimson, R.M.P. No. 3	lb.	.50	@
7-A	lb	.38	@
Z-2	lb.	.20	@
Antimony			
A. & W. red (4 shades)	lb.	2.50	@
purple	lb.	2.00	@
Sulphuret vermilion	lb.	.50	@
Iron oxides			
bright red pure domestic	lb.	.12	@
bright red pure English	lb.	.11	@ .14
bright red reduced English	lb.	.07½	@ .11
bright red reduced domestic	lb.	.10	@
Indian (maroon), red pure domestic	lb.	.11	@
Indian (maroon), red pure English	lb.	.11	@ .12
Indian (maroon), red reduced English	lb.	.07½	@ .09
Indian (maroon), red reduced domestic	lb.	.08	@ .10
Oximony	lb.	.13¼	@
Spanish red oxide	lb.	.02½	@ .04
Venetian reds	lb.	.02¼	@ .05
Pará toner	lb.	1.00	@ 1.15
Toluidine toner	lb.	2.00	@ 2.25
Vermilion, English quicksilver	lb.	1.40	@ 1.60
WHITE			
Albalith	lb.	.05½	@ .06½
Aluminum bronze	lb.	.55	@ 1.20
Lithopone	lb.	.06	@ .07
Azolith	lb.	.05¾	@ .06¾
Sterling	lb.	.05¾	@ .06¾
Zinc oxide			
AAA (lead free)	lb.	.07¼	@ .07¾
Azo (factory):			
ZZZ (lead free)	lb.	.07¼	@ .07¾
ZZ (5% leaded)	lb.	.06¾	@ .07⅜
Z (8% leaded)	lb.	.08	@ .08½

Colors

WHITE—*Continued*

French process, Florence brand			
Green seal	lb.	$0.11½@	$0.11⅝
Red seal	lb.	.10⅝@	.10⅝
White seal	lb.	.12⅜@	.12⅝
Horse Head brands			
Selected	lb.	.07¼@	.08¼
Special	lb.	.07¾@	.08¼
XX red	lb.	.07¼@	.07¾
Leaded brands			
Lehigh	lb.	.08 @	.08½
Standard	lb.	.06⅞@	.07⅜
Sterling	lb.	.08 @	.08½
Superior	lb.	.08 @	.08½
Palmerton process			
Kadox, black	lb.	.10⅞@	.11⅛
blue	lb.	.09⅞@	.10⅛
red	lb.	.08⅞@	.09⅛

YELLOW

A. & W. yellow	lb.	2.50 @	
Arsenic	lb.	.70 @	.75
Chrome	lb.	.17½@	.18½
Ochre, domestic	lb.	.02½@	.03½
imported	lb.	.03½@	.04½
Oxide, pure	lb.	.08 @	.10

Compounding Ingredients

Aluminum flake (sacks c.l.)	ton	21.85 @	
(sacks l.c.l.)	ton	24.50 @	
Aluminum silicate	ton	23.00 @	25.00
Ammonia carbonate	lb.	.17½@	.19
Are-o-sole	ton	10.00 @	14.00
Asbestine	ton	13.50 @	17.50
Barium, carbonate (bbl.)	ton	54.00 @	56.00
dust	lb.	.05 @	.06
Barytes, imported	ton	28.00 @	35.00
water ground and floated	ton	23.00 @	25.00
Basofor	lb.	.04½@	
Blanc fixe, dry	ton	75.00 @	85.00
pulp	ton	55.00 @	60.00
Chalk	ton	4.75 @	5.00
Clay, Dixie	ton	20.00 @	
Blue ribbon (c. l. fcty.)	ton	14.00 @	
Blue Ridge, dark	ton	9.00 @	
light	ton	12.00 @	
Catalpo (facty.)	ton	38.00 @	40.00
China	lb.	.01¾@	.02½
English	lb.	.02 @	.02½
Langford	ton	12.00 @	
White floss	ton	18.00 @	
Cotton flock, black	lb.	.12 @	.13
light-colored	lb.	.13 @	.15
white	lb.	.15 @	.24
Cotton linters clean mill run	lb.	.04½@	
Glue, high grade	lb.	.20 @	.29
medium	lb.	.18 @	.24
low grade	lb.	.14 @	.17
Graphite, flake	lb.	.06½@	.12
Mica, amber (fact'y)	lb.	.05 @	
water ground	lb.	.07 @	.08
Pumice stone, powd	lb.	.03 @	.05
Rotten stone (bbls.)	lb.	.02½@	.04½
Slate flour (fact'y c. l.)	ton	8.00 @	9.00
Soap bark, cut	lb.	.09¼@	.09½
Soapstone	ton	15.00 @	22.00
Sodium bicarb. (bbls.) 100	lbs.	2.00 @	
Starch, pcwd. corn			
Buffalo (bbls.) 100	lbs.	3.49 @	3.59
(bags) 100	lbs.	3.22 @	3.32

Chemical Market—*Continued*

New York Quotations

December 26, 1925

Compounding Ingredients—*Continued*

Talc, domestic	ton	$16.00 @	$18.00
French	ton	38.00 @	45.00
Terra blanche	ton	25.00 @	30.00
Whiting, alba	ton	12.00 @	
domestic No. 33	ton	10.00 @	
chalk, L. H. B	ton	17.00 @	25.00
commercial (facty.) 100	lbs.	.90 @	1.00
English, cliffstone 100	lbs.	1.50 @	2.00
gilders (bolted) 100	lbs.	1.25 @	1.35
Nelco	ton	12.00 @	22.50
Paris White 100	lbs.	1.60 @	2.00
Perfection	ton	13.00 @	18.00
Quaker	ton	13.00 @	
Snow-white, E. L. B.	ton	13.00 @	18.00
Sussex	ton	8.00 @	
Westminster Brand	ton	1.50 @	2.00
Witco (c.l.) (fact'y)	ton	12.00 @	
Wood pulp, XXX (facty.)	ton	35.00 @	
X (facty.)	ton	25.00 @	

Mineral Rubber

Genasco (facty.)	ton	50.00 @	52.00
Gilsonite (fact'y)	ton	37.14 @	39.65
Granulated M. R.	ton	33.00 @	38.00
Hydrocarbon, hard	ton	29.00 @	35.00
Hydrocarbon, soft	ton	29.00 @	35.00
Mineral flour	ton	17.00 @	20.00
Ohmlac Kapak, M-R	ton	70.00 @	80.00
K-4	ton	175.00 @	
320/340 m. p. hydrocarbon	ton	47.00 @	52.00
300/310 m. p. hydrocarbon	ton	42.00 @	47.00
Paradura (fact'y)	ton	70.00 @	72.50
Pioneer, M. R., solid (fac.)	ton	42.00 @	44.00
M. R. granular	ton	52.00 @	54.00
Robertson, M. R. solid (facty.)	ton	35.00 @	75.00
M. R. gran. (facty.)	ton	42.00 @	80.00

Oils (Softeners)

Avoilas compound	lb.	.12 @	.14
Castor, No. 1, U. S. P.	lb.	.15 @	
No. 3, U. S. P.	lb.	.14½@	
Corn, crude (bbls.)	lb.	.11¾@	
Cotton, summer yellow	lb.	.11 @	
Cycline	gal.	.26 @	.32
Glycerine	lb.	.20 @	.20½
Linseed, raw	gal.	1.03 @	
Liquid rubber	lb.	.12 @	
Moldrite	lb.	.05 @	.06
Palm lagos	lb.	.09 @	
niger	lb.	.08¾@	
Peanut, crude	lb.	.12 @	
refined	lb.	.14 @	
Petrolatum, standard	lb.	.06 @	.08
sticky	lb.	.08 @	.10
Pine, steam distilled	gal.	.60 @	
Rapeseed, refined	gal.	.97 @	
blown	gal.	1.18 @	
Rosin	gal.	.58 @	.80
Soya bean	lb.	.14¼@	.14½
Synthecite	lb.	.06 @	
Tar	gal.	.28 @	.42
Woburn	lb.	.05 @	

Resins and Pitches

Pitch, Burgundy	lb.	$0.07 @	
coal tar	lb.	.01½@	
Fluxol hardwood	lb.	.02 @	.04
pine tar	lb.	.04 @	
ponto	lb.	.07 @	
Rosin, K (bbl.) 280	lbs.	15.40 @	
strained (bbl.) 280	lbs.	18.00 @	
Shellac, fine orange	lb.	.70 @	
Tar, pine, retort	bbl	15.00 @	18.00
kiln	bbl.	15.00 @	16.00

Solvents

Benzol (90%, 7.21 lbs. gal.) pure	gal.	.28 @	
Carbon bisulphide (10.81 lbs. gal.) 99.9% pure (drums)	lb.	.07 @	
tetrachloride (13.28 lbs. gal.) 99.7% pure (drums)	lb.	.12 @	
Gasoline			
No. 303			
Tankcars	gal.	.21 @	
Drums, c. l.	gal.	.24 @	
Drums, l. c. l.	gal.	.27 @	
Motor gas (steel bbls)	gal.	.19 @	.20
Naphtha			
68° Bé., 122°, 324°	gal.	.20 @	
70° Bé., 114°, 314°	gal.	.21 @	
71° Bé., 112°, 304°	gal.	.22 @	
Turpentine, spirits	gal.	.98 @	
wood, steam distilled	gal.	.88 @	

Substitutes

Black	lb.	.08½@	.14
Brown	lb.	.09 @	.16
White	lb.	.09 @	.17
Brown T. K.	lb.	.10½@	.14
White T. K.	lb.	.13½@	.16½

Vulcanizing Ingredients

Sulphur chloride (drums)	lb	.06 @	
Sulphur, soft rubber, 100% pure (c.l.) 100	lbs.	2.50 @	2.75
(l.c.l.) 100	lbs.	2.80 @	3.30
Sulphur, Brooklyn brands			
Refined velvet (bbls.) 240	lbs.	3.05 @	3.30
(bags) 150	lbs.	2.80 @	3.05
Superfine flour (bbls.) 210	lbs.	2.65 @	2.95
(bags) 100	lbs.	2.30 @	2.60
Tire brand, superfine. 100	lbs.	2.00 @	2.25
Tube brand, velvet 100	lbs.	2.40 @	2.65
(See also Colors—Antimony)			

Waxes

Wax, beeswax, white, com.	lb.	.55 @	
carnauba	lb.	.38 @	.50
ceresine, white	lb.	.12½@	
montan	lb.	.06 @	.06½
ozokerite, black	lb.	.30 @	
green	lb.	.32 @	
Paraffin			
122/124 white crude scale	lb.	.05¼@	
124/126 white crude scale	lb.	.05⅞@	
120/122 fully refined	lb.	.06 @	
125/127 fully refined	lb.	.06½@	

Inventory—Production—Shipments of Pneumatic Casings—Inner Tubes—Solid Tires—Rubber and Fabric Consumption

High Pressure Pneumatic Casings

	Cord			Fabric		
1925	Inventory	Production	Total Shipments	Inventory	Production	Total Shipments
January	3,562,701	1,999,410	1,618,169	1,498,309	1,009,201	908,260
February	4,108,082	1,996,488	1,458,136	1,710,425	944,168	718,626
March	4,369,673	2,000,939	1,708,352	1,836,228	738,625	616,350
April	4,035,061	1,816,641	2,012,794	1,700,699	562,449	661,907
May	3,610,304	1,815,969	2,266,073	1,461,301	480,339	714,728
June	2,870,827	1,894,704	2,610,409	1,033,840	439,397	869,058
July	2,502,055	2,181,645	2,479,160	658,814	447,145	809,290
August	2,895,254	2,409,070	1,999,548	527,108	377,813	516,985
September	3,227,418	2,173,276	1,826,432	482,179	347,037	429,438
October	2,957,380	1,832,554	2,141,424	382,734	346,163	440,619

High Pressure Inner Tubes

				Balloon Inner Tubes		
1925	Inventory	Production	Total Shipments	Inventory	Production	Total Shipments
January	7,756,467	4,171,812	3,643,841	920,728	585,243	528,533
February	8,815,514	3,977,721	2,989,606	951,539	776,855	738,734
March	9,540,993	3,895,688	3,120,624	1,135,649	1,354,434	1,162,910
April	8,726,603	3,259,524	3,556,258	1,486,546	1,879,007	1,471,976
May	7,535,418	3,225,218	4,513,460	1,840,425	1,908,973	1,516,774
June	5,910,609	3,566,099	5,173,477	1,896,178	1,640,465	1,600,410
July	4,677,647	4,297,495	5,357,295	1,798,919	1,360,719	1,497,747
August	4,970,360	4,436,578	4,102,160	1,982,971	1,276,717	1,089,752
September	5,351,879	4,135,336	3,801,442	2,110,958	1,304,857	1,197,397
October	4,742,309	3,653,711	4,227,167	1,802,436	1,305,315	1,656,446

Compiled from Rubber Association figures.

Balloon Casings

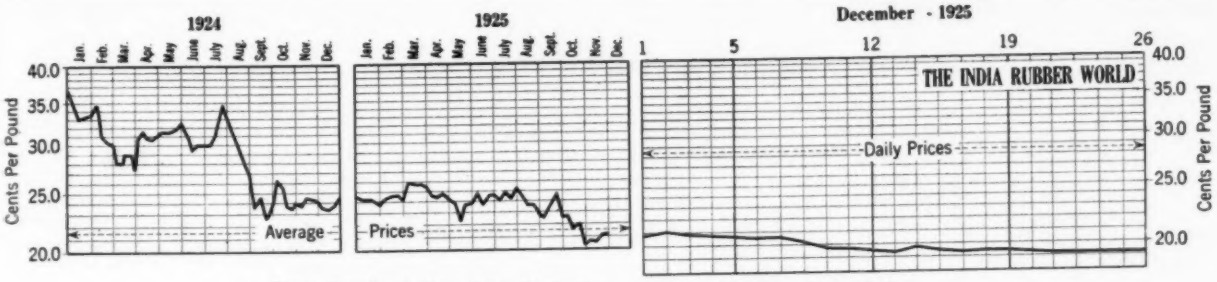
1925	Inventory	Production	Total Shipments
January	901,031	546,146	563,315
February	877,851	740,106	764,874
March	926,303	1,217,367	1,168,277
April	1,080,594	1,626,369	1,448,974
May	1,386,840	1,803,607	1,484,877
June	1,527,684	1,729,121	1,573,062
July	1,654,629	1,561,806	1,434,981
August	2,023,580	1,418,347	1,053,625
September	2,051,377	1,235,022	1,171,157
October	1,662,673	1,200,389	1,602,880

Solid and Cushion Tires

1925	Inventory	Production	Total Shipments
January	196,774	52,464	44,814
February	191,733	53,058	55,646
March	175,010	56,751	69,833
April	166,389	66,059	70,950
May	156,175	75,473	86,785
June	153,098	85,036	90,942
July	152,587	75,228	74,715
August	170,419	75,166	57,117
September	181,240	65,309	51,633
October	168,712	50,365	70,066

Cotton and Rubber Consumption casings, tubes, solid and cushion tires

1925	Cotton Fabric Pounds	Crude Rubber Pounds
January	12,310,822	42,170,869
February	13,363,986	41,720,847
March	15,040,609	46,365,630
April	14,902,337	48,154,633
May	14,984,561	47,639,298
June	15,840,498	53,366,781
July	16,013,761	53,197,164
August	15,758,123	52,170,657
September	14,025,320	46,745,268
October	12,446,040	42,211,384



Ratio Graph of New York Daily Prices of Spot Middling Upland Cotton

The Market for Cotton and Other Fabrics

New York

AMERICAN COTTON. The government crop report published November 21 placed the indicated yield at 15,298,000 bales compared with the November 1 forecast of 15,386,000 bales. This reduction of 88,000 bales caused an advance of 1 cent a pound in the price. The final government forecast published December 8 placed the crop at 15,603,000 bales. This exceeded expectations and caused only a minor drop in price which was promptly recovered on absorption of contracts by mill interests. The trade generally has adopted the belief that the crop will prove nearer 16,000,000 bales than the government's last estimate of 15,603,000 bales and consequently that present trade conditions will not justify the assumption that such a production can be absorbed at present current values.

PIMA COTTON. New crop No. 2 pima cotton was quoted at 49 cents, December 2. From this level it declined steadily to 38 cents the figure quoted December 24.

EGYPTIAN COTTON. Late in November, Egyptian grades advanced in sympathy with the rise in domestic cottons as a result of the government report of the crop outlook. Uppers showed the most radical advance as a result of purchases by the Egyptian government. Heretofore government purchases have been confined to Sak and the change to Uppers seems to indicate that it has all of the Sak that it cares to carry at present. December 2, c.i.f., Boston quotations on Egyptian cottons were 36⅜ cents for Medium Sakellarides and 30¾ cents for Medium Uppers for January-February shipment. During the month declines were in progress. December 23, Boston quotations were 33½ cents for Medium Sakellarides and 27⅜ cents for Medium Uppers for January-February shipment.

Egyptian cotton is now at lowest level since 1923. Should there be any marked resumption in demand it is probable that the premiums for Uppers and for pure Sakel will stiffen and this in turn will strengthen futures, which are neglected when conditions on the spot market are as easy as they have been.

Cotton Fabrics

DUCKS, DRILLS AND OSNABURGS. The market is in good position. The outlook indicates active business after the turn of the year. Deliveries are taken up over the next three to six months on wide loom goods, and for about 60 days on narrow loom goods. Prices have acted very well in view of the decline of substantially six cents a pound from the high in cotton.

RAINCOAT FABRICS. The business in these lines was very good for December which is generally a quiet month for the rubber trade.

SHEETINGS. Early in December there was good inquiry but very little doing except in small spot sales. Bids were much too low to be workable by the mills. During most of the month trade ruled quiet or limited. Cotton goods merchants expect prices will stabilize not far from present levels which have discounted a cotton crop of 16,000,000 bales. Certainly there is nothing at present to cause any advance in raw cotton quotations and it is believed that future fluctuations will be dependent upon consumption reports.

TIRE FABRICS. The market is quiet as usual at the close of the year. Many concerns have secured their requirements to a large extent for the first six months of 1926, but there is still a good volume of business to be placed if tire production comes up to expectations. Lower prices for raw cotton are indicated in the price for tire fabrics, which are still very low from the fabric manufacturers' standpoint. Prices still seem to be based on present cotton levels. Some better grade fabrics are selling below present cotton basis due to the fact that middling and better staples have advanced several cents over their lows of the year. Some mills purchased supplies at a premium decidedly under the market.

New York Quotations

December 26, 1925

Drills

38-inch 2.00-yard	yard	$0.20 @
40-inch 3.47-yard		.11⅔ @
52-inch 1.90-yard		.21⅞ @
60-inch 1.52 yard		.27½ @

Ducks

38-inch 2.00-yard	yard	.20½ @
40-inch 1.47-yard		.27½ @
72-inch 16.66-ounce		.45¾ @
72-inch 17.21-ounce		.48⅞ @
MECHANICAL		
Hose and belting	pound	.38 @
Specials		.42 @
TENNIS		
52-inch 1.35-yard	yard	.32 @

Hollands

DEAD FINISH		
Standard, 37-inch	yard	.19½ @
42-inch		.23½ @
RED SEAL		
36-inch		.18 @
40-inch		.19 @
50-inch		.30 @
FLAT FINISH		
Imperial, 36-inch		.15½ @
40-inch		.17½ @

Osnaburgs

40-inch 2.35-yard	yard	.17⅛ @
40-inch 2.48-yard		.16⅓ @
40-inch 3.00-yard		.13½ @
37-inch 2.42-yard		.16⅝ @

Raincoat Fabrics

COTTON		
Bombazine 64 x 60	yard	.13 @
Bombazine 60 x 48		.12 @
Plaids 60 x 48		.12¼ @
Plaids 56 x 44		.12¼ @
Surface prints 60 x 48		.13 @
Surface prints 64 x 60		.14 @

Sheetings, 40-inch

40 x 48, 2.50-yard	yard	.13¼ @
48 x 48, 2.85-yard		.12 @
64 x 68, 3.15-yard		.13½ @
56 x 60, 3.60-yard		.11½ @
48 x 44 3.75-yard		.10½ @

Sheetings, 36-inch

48 x 48, 5.00-yard	yard	$0.08 @
40 x 40, 6.15-yard		.06⅛ @

Tire Fabrics

SQUARE WOVEN 17½-ounce			
Egyptian, karded	pound	.56 @	.57
Peeler, karded		.46 @	.47
CORD 23/5/3			
Egyptian, combed	pound	.63 @	.65
Egyptian, karded		.56 @	.58
Peeler, combed, 1 1/16-in.		.65 @	.67
Peeler karded, 1 1/16-in.		.48 @	.49
CORD 13/3/3			
Peeler karded	pound		
8.25-oz. Peeler, karded (2 ply)		.44 @	.45
LENO BREAKER			
8-oz. Peeler, karded	pound	.45 @	.46
10-oz. Peeler, karded		.46 @	.47
CHAFER			
8.25-oz. Peeler, karded (2 ply)	pound	.45 @	.46
9.5-oz. Peeler, karded (4-ply)		.47 @	.48
12-oz. Peeler, karded		.46 @	.47
14-oz. Peeler, karded		.46 @	.47

The Cotton Outlook

THE final government estimate of cotton production for 1925, issued as of December 1, forecasts a total outturn of 15,603,000 bales. This is 305,000 bales greater than the estimate based on November 14 reports. If the present anticipation is realized the crop will be the largest since 1914, when the total was 16,135,000 bales. Last year total ginnings were 13,627,936 bales.

Ginnings to December 1, according to the Bureau of the Census, were 13,857,686 bales, compared with 12,237,659 on December 1, 1924. On that date it was estimated that only about 10 to 12 per cent of the cotton crop remained unginned.

The acreage picked is estimated at 45,945,000 acres, an increase of 11.1 per cent over the acreage picked last year. The abandonment of acreage since June 25 is estimated at 4.6 per cent, compared with 3 per cent last year. The total yield of lint cotton per acre on the area left for harvest is forecast at 162.3 pounds, compared with 157.4 pounds last year and 146.4 pounds for the five-year average.

Big Demand Expected to Absorb Crop

However much the government estimate may differ from the final actual returns, it is commonly agreed that the present crop is an exceptionally large one. The certainty of this for some weeks past has brought the cotton market to its present condition of comparative stability. The statistical position and improvement in trade seem to indicate that the crop produced will be needed and disposed of on the basis of about 20 cents for middling.

All this, however, depends somewhat upon the degree to which consumers are to share in the benefits to be derived. Textile manufacturers have of late been steadily, under pressure of necessity, reducing the selling prices of their goods. It will not be long at the present rate of change before cotton goods will be priced upon the basis of about 20-cent raw material. This, however, must be passed along to the consuming public by the distributing trade and manufacturers of miscellaneous goods if the consuming public is willing to increase its purchases in the degree necessary to absorb the supply of raw cotton now available.

Foreign demand, which has been heavy, swells the total world consumption of American cotton considerably. While British cotton spinners have been buying a little less from the United States in recent weeks, total taking for the season to date has been considerably in excess of last year. British trade is improving and a prosperous period is seen at hand so that no serious falling off of British buying is expected. Other foreign countries are buying heavily. Recognized authorities agree that the experience thus far for this season would point to a consumption of American cotton for the 1925-1926 season of 14,250,000 bales of lint cotton, plus 925,000 bales of linters, making a total of 15,175,000 bales. For the year 1924-1925, according to the International Federation of Master Cotton Spinners and Manufacturers Association, 13,229,000 bales of lint cotton were consumed, plus 841,713 bales of linters, making a total of 14,070,715 bales.

Single Variety Cotton Growing a Success

Single variety cotton production in the San Joaquin Valley, California, is aiding materially in the rapid expanse of the cotton growing industry there, according to the Department of Agriculture. The variety cultivated, the Acala, is an early productive, medium-staple upland cotton, with large bolls which open widely, making them easy to pick. It produces high average yields and is unusually resistant to adverse seasons or poor cultural conditions.

As a result of growing a single variety, farmers have become skilful in handling the crop. Through improved cultural methods average yields have been increased from half a bale to a bale an acre, with yields of one and one-half to two bales becoming more and more frequent. At the same time the fiber is more uniform and in greater demand by manufacturers, in consequence of which growers in the Valley have been receiving a premium of one to four cents a pound above the current price of middling cotton. So profitable has the industry become that from 1,500 acres in 1921 the acreage has been increased to approximately 75,000 acres in 1925.

Standardization of the product has also brought about a more uniform scale of picking and ginning charges, and has facilitated the securing of state cotton classers for some of the larger centers of the Valley.

Changes in Government Crop Reporting Agitated

The widespread agitation for discontinuance of the semi-monthly condition and estimated production reports of the Department of Agriculture still gains momentum, on the ground that these estimates tend to unsettle rather than stabilize the market. At a conference of senators and representatives from the cotton growing states, held in Washington early in December, it was stated by Congressman J. G. McSwain, of the fourth South Carolina district, that the South this year has lost from $300,000,000 to $450,000,000 because of market price fluctuations caused by the publication of these reports.

"Take the government out of the guessing business," he said. "Let the government confine itself strictly to reports. A guess by the government is no better than a guess by some one else, yet such estimates are used by speculators to keep the prices down."

In line with the spirit of this conference Representative James B. Aswell, of Louisiana, is proposing to the present Congress a bill prohibiting issuance of intention-to-plant reports covering cotton and the semi-monthly condition and estimated production reports of the Department of Agriculture.

As a substitute for the present reports there would be issued monthly condition reports covering the cotton crop during the growing season, and one final report of facts as to the size of the cotton crop issued on December 10.

The bill also contemplates the placing of three experienced cotton producers on the crop reporting board of the Department of Agriculture.

BRITISH EXPORTS OF AUTOMOBILE CASINGS

British exports of automobile casings totaled during the first nine months of 1925, 650,731, value £1,643,826, as compared with shipments during the entire year 1924 of 550,263 casings, value £1,379,083. Much of this increase, according to the Department of Commerce, is due to the gains made by the Dunlop company, most of the British tires exported having been manufactured by this organization. Leading markets for these goods during the nine months in question were as follows: British India, 67,940 casings, value £170,142; Irish Free State, 67,226, value £147,291; Australia, 36,613, value £130,909; British South Africa, 39,594, value £108,128; Sweden, 26,186, value £78,882; Brazil, 46,011, value £72,804; Argentina, 30,600, value £67,507; Denmark and Faroe Islands, 31,110, value £63,489; Netherlands, 24,094, value £63,108; Mexico, 22,397, value £55,527; and New Zealand, 14,831, value £48,374.

FRENCH EXPORTS OF AUTOMOBILE CASINGS HAVE AVERAGED 163,000 a month during the first nine months of 1925, the figure being 16.5 per cent larger than for the corresponding period of 1924.

Metal Market Review

New York

THE metal markets show in general comparatively little activity, while prices either remain unchanged, or indicate a tendency to decline. Steel production however is said to be a little above normal, and consumption continues large.

ALUMINUM. Virgin metal, 98 to 99 per cent pure, is being quoted at 28 cents, delivered. Press reports state that the Aluminum Company of America is building an addition to its Massena, New York, plant, where finished aluminum products will be turned out.

ANTIMONY. The scarcity of Chinese metal becomes more pronounced, and spot delivery is quoted at 22 cents, New York, duty paid.

COPPER. The primary production of copper by United States mines amounted in November to 67,897 short tons compared with 70,819 tons in October and 67,720 tons in September. Shipments in November were 236,982,000 pounds as against 235,582,000 pounds in October, an increase of 1,400,000 pounds. Although copper stocks, as of November 30, show a decrease of 10,034,000 pounds, there is said to be little expectation of real improvement in values until export sales become more normal.

LEAD. Financial conditions in France are said to be having their effect upon all the markets, and lead is no exception. Buying is of a routine nature, only small tonnages for prompt uses, while futures are practically neglected.

STEEL. December conditions in the steel industry continue to be most encouraging, and the estimates for the year 1925 are that a new high figure in ingot production of over 44,000,000 tons may be expected. Heretofore 1917 was the record year with 43,619,200 tons, 1923 being second with 43,485,665 tons. According to the *American Metal Market*: "November was the heaviest month of this year in steel bookings and, with the exception of December a year ago, the heaviest in nearly three years."

TIN. The decline in tin is said to be the severest in months although the statistical position of the metal is sound. Chinese tin is not being offered freely, while English 99 per cent tin comes to America only in small amounts.

ZINC. Prompt zinc continues scarce, and advances in prices are expected. The metal is said to be in a firm position, and November statistics show a low reserve.

Basic Metals

December 23, 1925

	Cents per pound
Aluminum, virgin, 98@99 per cent	28.00 @29.00
Antimony	22.00 @22.50
Copper—Lake, spot	14.125 @14.25
Electrolytic, spot	14.125 @
Castings, refinery	13.625 @
Lead, spot, New York	9.20 @ 9.25
Lead, spot, East St. Louis	9.05 @ 9.10
Tin, spot	63.00 @
Zinc, spot, New York	9.05 @ 9.10
Zinc, spot, East St. Louis	8.70 @ 8.75

Steel Wire

BASE PRICE* ON NO. 9 GAGE AND COARSER

	Cents per pound
Bright basic	4.25 @
Annealed soft	4.50 @
Galvanized annealed	5.15 @
Coppered basic	5.15 @
Tinned soft Bessemer	6.15 @

*Regular extras for lighter gage.

Copper Wire

BASE PRICE F. O. B. FACTORY

	Cents per pound
Bare copper wire	16.375 @
No. 6 B. & S. gage	16.375 @
No. 8 B. & S. gage	16.375 @
No. 14 B. & S. gage	17.375 @

Plantation Rubber Exports from Dutch East Indies

Java and Madura

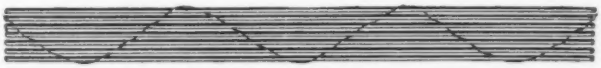
	July		Seven Months Ended July	
	1924 Kilos	1925 Kilos	1924 Kilos	1925 Kilos
To—				
Holland	156,000	217,000	1,635,000	1,117,000
Holland for order	65,000	294,000	708,000	1,409,000
Great Britain	560,000	677,000	4,088,000	4,161,000
Great Britain for order	5,000	34,000	59,000	279,000
Germany and for order	45,000	297,000	259,000	933,000
France and for order	88,000	70,000	244,000	327,000
Belgium and for order	.....	21,000	9,000	130,000
Italy and for order	71,000	65,000	232,000	372,000
Canada	.....	.....	.....	2,000
United States and for order	2,246,000	2,805,000	14,536,000	17,979,000
South America	.....	59,000	.....	156,000
Singapore	287,000	114,000	1,730,000	938,000
Hongkong	.....	.....	27,000	3,000
Japan	90,000	.....	687,000	65,000
Australia	21,000	152,000	235,000	358,000
Other countries	.....	1,000	.....	4,000
Totals	3,634,000	4,806,000	24,449,000	28,233,000
Ports of Origin:				
Tandjong-Priok	1,335,000	2,475,000	9,000,000	11,455,000
Cheribon	.....	.....	46,000	25,000
Samarang	335,000	372,000	1,743,000	2,126,000
Sourabaya	1,535,000	1,408,000	10,187,000	10,496,000
Pasuruan	126,000	105,000	807,000	719,000
Probolinggo	38,000	104,000	627,000	637,000
Panarukan	143,000	132,000	824,000	1,277,000
Banjuwangi	45,000	79,000	501,000	634,000
Tjilatjap	75,000	130,000	713,000	858,000

Belawan

	July		Seven Months Ended July	
	1924 Kilos	1925 Kilos	1924 Kilos	1925 Kilos
To—				
Holland	239,000	228,000	1,145,000	1,231,000
Great Britain	374,000	451,000	2,424,000	4,400,000
Germany	10,000	24,000	248,000	269,000
France	100,000	42,000	202,000	145,000
Italy	35,000	20,000	116,000	269,000
Belgium	.....	.....	5,000	9,000
Austria	.....	.....	73,000	.....
United States	1,964,000	1,926,000	15,578,000	11,396,000
British South Africa	.....	.....	7,000	14,000
Singapore	83,000	54,000	571,000	570,000
Penang	109,000	189,000	535,000	1,132,000
Hongkong	.....	.....	30,000	10,000
Australia	3,000	18,000	9,000	45,000
Other countries	.....	.....	1,000	1,000
Totals	2,917,000	2,952,000	20,944,000	19,491,000

TIRE BEAD FLAT TAPE

A new fabricated wire structure known as flat tape is being used in the construction of beads for straight side tires. The form of this wire tape is shown in the illustration. It is manufactured in endless lengths and consists of a number of spaced steel wires held in place by an interwoven smaller wire passing from side



Flat Tape for Tire Beads

to side, in wave formation. The tape can be made of any number of strands of any gage within reason, to make up a bead. It is built into the bead by winding it the number of laps required to suitably reinforce the rubber construction.—American Chain Co., Bridgeport, Connecticut.

BRITISH NORTH BORNEO

From a report of the annual meeting of the North Borneo Chamber of Commerce it is learned that rubber is recovering and plantations which were heavily in debt and on the verge of closing down have not only been able to wipe out their deficits, but in some cases to pay dividends. During 1924, rubber exports were 10,350,251 pounds, value $4,739,895, against 9,495,198 pounds, value $4,806,539, an increase in 1924 of 855,053 pounds.

Exports of India Rubber Manufactures from the

EXPORTED TO	Belting Value	Hose Value	Packing Value	Thread Value	Boots Pairs	Boots Value	Shoes Pairs	Shoes Value	Canvas Shoes with Rubber Soles Pairs	Canvas Shoes with Rubber Soles Value	Soles and Heels Value	Waterproofed Auto Cloth and Rubberized Fabrics Value
EUROPE												
Austria	$1,160	$140	.....	.....	3,360	$5,934	3,853	$4,593	924	$1,503	.....	$332
Azores and Madeira Islands	131	.....	.....	.....	.....	.....	.....	.....	.....	.....	$91	.....
Belgium	2,965	4,796	$293	$12,492	1,242	2,253	2,788	1,922	120	171	20	2,142
Bulgaria	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Czechoslovakia	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Denmark	2,815	354	979	.....	13,893	31,905	13,837	7,581	1,212	3,184	1,850	520
Finland	2,213	28	.....	.....	1,088	3,289	.....	.....	48	104	1,314	.....
France	1,938	105	1,829	69,595	206	799	126	148	120	208	.....	537
Germany	58	1,020	597	5,366	600	2,085	7,658	7,449	168	337	1,750	818
Greece	.....	1,012	.....	.....	280	912	.....	.....	.....	.....	.....	3,889
Hungary	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	283
Iceland & Faroe Islands	.....	.....	.....	.....	2,369	8,121	2,528	2,341	.....	.....	.....	.....
Irish Free State	.....	.....	.....	.....	.....	.....	48	30	.....	.....	.....	.....
Italy	.....	.....	.....	15,867	384	1,308	.....	.....	120	86	.....	2,423
Latvia	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	146	154
Malta, Gazo and Cyprus Islands	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	56
Netherlands	3,198	6,419	382	.....	.....	.....	.....	.....	.....	.....	816	140
Norway	779	1,210	.....	.....	1,791	5,170	17,527	12,297	552	347	1,639	.....
Poland and Danzig	98	32	.....	116	.....	.....	.....	.....	.....	.....	.....	.....
Portugal	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Rumania	.....	338	.....	.....	.....	.....	180	125	.....	.....	52	.....
Russia in Europe	.....	2,179	.....	.....	.....	.....	500	200	.....	.....	.....	.....
Spain	1,228	.....	234	6,528	.....	.....	.....	.....	.....	.....	.....	.....
Sweden	6,098	3,406	88	.....	.....	.....	.....	.....	.....	.....	.....	.....
Switzerland	175	34	.....	734	5,933	16,445	.....	.....	.....	.....	202	113
Turkey in Europe	.....	.....	.....	.....	156	537	3,264	2,746	540	1,261	6,726	1,136
United Kingdom	17,462	39,844	4,545	48,253	53,780	117,135	18,411	9,761	1,369	1,521	105	1,206
Yugoslavia, Albania, etc.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	158
TOTALS, EUROPE	$40,318	$60,917	$8,947	$158,951	85,082	$195,893	70,720	$49,193	5,173	$8,722	6,319	28,478
											$21,030	$42,385
NORTH AMERICA												
Canada	$8,298	$5.502	$12,988	$11,341	5,695	$8,405	319	$745	34	$98	$1,410	$14,592
British Honduras	23	24	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Costa Rica	114	178	106	.....	.....	.....	.....	.....	48	39	1,335	190
Guatemala	97	40	204	.....	.....	.....	.....	.....	1,988	1,202	2,847	152
Honduras	168	616	72	.....	24	53	120	90	1,839	1,454	2,238	.....
Nicaragua	724	941	262	.....	15	65	36	36	1,372	1,277	905	.....
Panama	75	6,428	272	.....	12	45	166	195	5,527	4,202	403	118
Salvador	35	.....	.....	.....	.....	.....	204	149	4,594	2,639	3,309	.....
Mexico	22,859	16,173	7,233	111	163	731	754	687	14,820	12,767	15,421	17,949
Miquelon & St. Pierre Islands	.....	.....	.....	.....	48	182	.....	.....	.....	.....	.....	.....
Newfoundland and Labrador	125	875	304	.....	1,172	3,414	2,053	2,203	106	93	1,715	58
Bermuda	.....	43	64	.....	76	231	222	220	513	425	95	8
Barbados	197	299	117	.....	.....	.....	.....	.....	504	448	.....	353
Jamaica	2	186	525	.....	.....	.....	.....	.....	652	620	22	312
Trinidad and Tobago	.....	588	.....	.....	.....	.....	.....	.....	1,865	1,188	167	310
Other British West Indies	7,447	8,899	17,485	.....	139	452	195	199	1,459	1,252	284	106
Cuba	739	1,850	788	.....	.....	.....	.....	.....	27,440	14,757	8,151	6,438
Dominican Republic	.....	1,763	3,310	.....	.....	.....	.....	.....	20,034	14,205	297	.....
Dutch West Indies	106	.....	.....	.....	.....	.....	55	13	7,864	5,905	143	.....
French West Indies	824	1,187	77	.....	.....	.....	.....	.....	.....	.....	.....	.....
Haiti	10,867	10,999	.....	.....	.....	.....	.....	.....	6,140	4,491	833	.....
Virgin Islands of U. S.	.....	.....	.....	.....	.....	.....	.....	.....	1,210	1,086	.....	.....
TOTALS, NORTH AMERICA	$52,700	$56,591	$43,807	$11,452	7,344	$13,578	4,124	$4,537	98,009	$68,148	$39,575	$40,586
SOUTH AMERICA												
Argentina	.....	.....	$2,624	.....	120	$320	2,532	$2,456	110,008	$64,268	$1,567	$12,755
Bolivia	$1,932	$2,198	157	.....	.....	.....	.....	.....	308	191	1,019	.....
Brazil	19,551	5,189	2,033	.....	12	84	1,280	983	72	116	.....	3,540
Chile	1,816	7,985	2,629	.....	.....	.....	.....	.....	887	578	351	1,322
Colombia	3,048	1,942	375	$74	78	81	876	632	13,124	8,587	8,736	2,983
Ecuador	19	4,029	461	.....	.....	.....	90	86	1,500	804	665	132
British Guiana	.....	96	846	.....	.....	.....	.....	.....	.....	.....	103	92
Dutch Guiana	578	.....	9	.....	.....	.....	288	266	336	222	106	.....
French Guiana	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Paraguay	390	732	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Peru	1,334	5,416	1,916	.....	36	282	12	15	319	420	393	59
Uruguay	56	164	381	.....	.....	.....	.....	.....	6,830	4,885	3,913	1,252
Venezuela	207	3,020	489	.....	.....	.....	.....	.....	312	203	2,330	.....
TOTALS, SOUTH AMERICA	$28,931	$30,771	$11,920	$74	246	$767	5,078	$4,378	133,696	$80,274	$19,183	$22,135
ASIA												
Aden	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
British India	$6,774	$2,062	$5,471	.....	.....	.....	.....	.....	5,940	$5,682	$143	$183
Ceylon	.....	142	.....	.....	.....	.....	.....	.....	.....	.....	21	.....
Straits Settlements	1,653	465	437	.....	.....	.....	.....	.....	1,524	1,102	.....	797
Other British East Indies	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
China	1,001	740	1,886	.....	400	$331	2,638	$1,943	.....	.....	218	2,003
Chosen	.....	88	.....	.....	.....	.....	72	66	.....	.....	.....	.....
Java and Madura	6,874	3,237	2,162	.....	.....	.....	.....	.....	816	1,789	.....	6,879
Other Dutch East Indies	659	85	221	.....	.....	.....	.....	.....	.....	.....	.....	.....
French Indo-China	.....	.....	.....	.....	.....	.....	.....	.....	1,445	1,246	.....	.....
Hejaz, Arabia, etc.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hongkong	.....	.....	.....	.....	50	155	44	42	34	29	.....	207
Japan	3,110	10,537	5,445	$9,952	.....	.....	480	430	.....	.....	.....	2,791
Kwangtung, leased territory	.....	.....	1,359	.....	.....	.....	960	744	.....	.....	.....	.....
Palestine and Syria	.....	10	.....	.....	.....	.....	15	15	.....	.....	.....	.....
Persia	.....	327	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Philippine Islands	5,739	2,446	786	.....	48	187	169	63	77,926	70,633	4,454	1,908
Siam	.....	.....	45	.....	.....	.....	.....	.....	180	111	.....	.....
TOTALS, ASIA	$25,810	$20,139	$17,812	$9,952	498	$673	4,428	$3,303	87,865	$80,592	$4,836	$14,768
OCEANIA												
Australia	$9,445	$18,982	$3,404	.....	1,872	$5,488	2,544	$1,290	2,799	$3,208	$3,449	$23,735
British Oceania	.....	41	.....	.....	.....	.....	.....	.....	768	768	.....	.....
French Oceania	.....	24	.....	.....	.....	.....	.....	.....	391	417	.....	55
New Zealand	2,932	3,577	1,576	.....	282	1,001	.....	.....	.....	.....	730	1,704
Other Oceania	.....	27	.....	.....	.....	.....	.....	.....	972	1,150	11	.....
TOTALS, OCEANIA	$12,377	$22,651	$4,980	.....	2,154	$6,489	2,544	$1,290	4,930	$5,543	$4,190	$25,494

United States by Countries During October, 1925

Waterproofed Outer Garments Value	Pneumatic Casings: Automobile Number	Pneumatic Casings: Automobile Value	Pneumatic Casings: Others Value	Pneumatic Tubes: Automobile Value	Pneumatic Tubes: Others Value	Solid Tires: Automobile and Motor Truck Number	Solid Tires: Automobile and Motor Truck Value	Solid Tires: Others Value	Tire Rubber Accessories, Repair Materials Value	Hard Rubber Goods: Electrical Supplies Value	Hard Rubber Goods: Others Value	Rubber Water Bottles and Fountain Syringes Value	Other Druggists' Rubber Sundries Value	Bathing Caps Value	Rubber Toys, Balls and Balloons Value
.....	264	$4,890	$158	$256	.....	62	$2,675	.....	$524	.....	$181	.....	.....	.....	$2,518
.....	2	17	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	2,281	54,030	130	6,884	.....	3	327	.....	1,334	.....	158	$264	$1,536	$54	11
.....	.....	.....	.....	.....	.....	.....	.....	.....	46	.....	.....	.....	.....	.....	.....
.....	611	12,921	875	1,894	.....	134	4,540	.....	204	.....	.....	.....	.....	.....	.....
$617	2,863	46,672	26	5,658	$154	125	3,904	.....	1,607	$27	65	.....	.....	.....	.....
.....	215	5,554	.....	638	.....	.....	.....	.....	533	.....	.....	.....	1,861	858	99
48	2,936	55,213	176	16,366	.....	.....	.....	.....	4,932	.....	.....	.....	.....	.....	.....
11	734	15,575	43	1,136	.....	.....	.....	.....	4,943	95	13,835	1,547	1,815	408	232
.....	1,540	25,764	310	4,613	.....	131	3,408	.....	1,003	.....	.....	875	319	317	2,542
.....	49	963	.....	226	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	264	4,270	.....	592	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	427
.....	150	1,582	.....	472	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
16	265	4,390	.....	812	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	208	4,552	.....	406	.....	.....	.....	.....	4,166	.....	.....	310	1,224	176	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	78	.....	.....	.....	.....	.....	189
.....	1,459	37,128	2,682	7,106	970	22	926	.....	135	.....	.....	.....	.....	.....	189
.....	896	16,983	80	2,238	.....	86	5,253	.....	2,675	.....	.....	245	1,615	387	2,311
.....	100	2,673	.....	457	.....	.....	.....	.....	1,086	.....	.....	.....	564	269	157
.....	400	8,237	.....	2,169	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	258	6,148	.....	1,517	.....	.....	.....	.....	710	.....	.....	.....	464	.....	59
.....	25	469	685	89	203	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	1,644	31,653	.....	4,342	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	2,644	53,621	74	4,833	.....	62	3,493	$145	3,291	775	.....	.....	327	38	61
.....	295	14,902	.....	3,773	.....	22	2,410	.....	1,834	.....	859	.....	2,763	180	60
.....	58	1,051	.....	435	.....	2	195	.....	.....	.....	.....	160	348	.....	.....
3,342	15,601	219,961	3,837	21,164	60	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	266	4,405	701	1,186	.....	2,303	66,403	7,721	10,373	8,288	19,184	12,449	44,576	24	44,681
.....	.....	.....	.....	.....	.....	74	2,365	.....	.....	.....	.....	.....	.....	.....	.....
$4,034	36,022	$633,624	$6,777	$89,292	$1,387	3,026	$95,489	$7,866	$39,514	$9,185	$34,282	$15,850	$57,412	$2,711	$53,486
$2,991	985	$21,803	.....	$5,513	$288	84	$3,331	$132	$8,629	$32,265	$11,174	$3,765	$17,396	$82	$5,885
35	31	319	.....	84	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	238
275	189	5,357	.....	523	.....	.....	.....	.....	181	.....	.....	.....	.....	.....	155
393	189	6,336	.....	1,329	13	.....	.....	1,302	147	.....	34	46	303	22	.....
1,912	166	3,538	.....	567	.....	20	1,321	.....	.....	.....	48	29	72	10	239
72	140	2,486	.....	616	.....	2	120	.....	.....	.....	35	.....	271	.....	224
43	667	13,100	$332	5,279	6	20	754	.....	274	.....	.....	.....	399	117	316
.....	72	1,691	.....	796	.....	.....	.....	.....	.....	17	25	.....	59	.....	106
2,175	3,073	55,267	203	10,800	451	285	6,708	1,885	2,297	135	851	838	3,487	.....	6,718
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1,986	42	650	.....	61	.....	6	201	512	29	.....	21	.....	76	.....	.....
71	.....	.....	.....	.....	.....	.....	.....	638	.....	.....	.....	.....	16	.....	.....
.....	34	390	.....	5	.....	2	40	.....	.....	.....	.....	.....	.....	.....	.....
334	63	996	.....	91	.....	38	2,033	27	132	.....	248	.....	.....	.....	103
.....	12	117	.....	.....	.....	2	86	.....	66	.....	.....	.....	.....	32	1,133
105	79	1,411	144	469	.....	.....	.....	97	31	.....	.....	.....	.....	.....	516
4,109	8,543	102,998	531	16,043	135	890	31,465	636	6,810	.....	1,446	504	3,564	37	41
201	1,295	12,069	193	763	.....	46	2,138	115	244	9	.....	.....	.....	.....	1,682
.....	247	3,848	.....	1,119	.....	3	63	.....	62	.....	11	.....	.....	.....	114
.....	28	389	.....	16	28	2	236	470	.....	.....	.....	.....	.....	.....	.....
.....	466	9,300	150	2,372	25	.....	.....	510	440	.....	.....	.....	29	.....	37
.....	26	267	.....	9	.....	.....	.....	.....	.....	.....	.....	.....	26	.....	5,470
$14,702	16,338	$242,332	$1,553	$46,365	$946	1,400	$48,496	$6,324	$19,342	$32,426	$13,888	$5,182	$25,817	$300	$22,977
.....	13,926	$183,824	$295	$55,867	.....	610	$18,576	$356	$15,504	$687	.....	$313	$3,238	$95	$754
$6,694	6	252	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	325	.....	.....
727	7,899	96,379	.....	9,105	.....	327	12,118	.....	701	.....	$2,561	551	1,590	.....	702
186	724	17,421	.....	1,664	.....	21	1,139	1,625	1,289	.....	.....	281	850	.....	248
.....	922	20,684	170	5,885	$36	21	1,320	104	1,182	.....	28	105	1,021	36	1,593
45	312	6,855	.....	954	.....	.....	.....	18	99	142	.....	184	323	84	380
.....	12	181	.....	16	.....	2	37	.....	249	.....	.....	.....	.....	.....	252
.....	27	364	.....	273	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	27
.....	6	79	.....	13	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	35
1,258	1,183	17,763	90	1,595	.....	18	786	.....	195	139	508	7	515	.....	349
108	2,646	34,038	.....	2,665	.....	30	1,469	.....	339	.....	.....	30	713	851	816
.....	1,553	29,567	.....	6,800	.....	53	1,515	.....	479	.....	115	487	751	.....	625
$9,018	29,216	$407,407	$555	$84,837	$36	1,082	$36,960	$2,103	$20,037	$968	$3,212	$1,958	$9,326	$1,066	$5,781
.....	222	$2,691	.....	$396	.....	.....	.....	.....	$13	.....	.....	.....	.....	.....	.....
.....	6,003	51,093	.....	7,529	.....	234	$7,459	$26,875	353	.....	.....	$507	$1,569	.....	7,792
.....	227	5,941	.....	505	.....	65	1,508	402	87	.....	.....	.....	.....	$18	197
.....	757	9,426	.....	3,301	.....	76	2,416	.....	93	.....	.....	708	.....	.....	624
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	936
.....	2,061	22,800	$10,813	5,889	$142	179	2,937	.....	944	.....	$35	1,161	549	.....	.....
$13	25	224	.....	133	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
22	1,964	28,259	.....	3,103	43	489	16,438	6,976	592	.....	100	53	14	465	.....
.....	84	1,462	.....	173	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	16	224	.....	46	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	424	13,215	.....	3,774	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	201
.....	.....	.....	.....	.....	.....	1,156	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	10,659	120,138	1,173	26,650	.....	.....	18,764	.....	4,712	$950	2,970	654	686	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2,886	60	.....
.....	734	14,669	.....	1,726	.....	.....	.....	.....	4,024	.....	.....	.....	239	.....	.....
1,722	26	585	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	447
.....	6,631	85,449	992	9,802	195	627	16,649	22,431	2,573	26	.....	638	454	34	529
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	295
$1,755	29,827	$356,176	$12,978	$63,027	$380	2,826	$66,171	$56,684	$13,391	$976	$3,105	$3,721	$5,737	$577	$11,021
$1,193	10,656	$175,390	$1,158	$17,018	$709	1,775	$58,920	$2,829	$16,901	$1,928	$1,212	$269	$9,180	$1,735	$2,938
.....	11	178	17	19	.....	.....	.....	.....	73	.....	.....	.....	.....	.....	.....
41	72	1,127	12	249	.....	8	398	15	.....	.....	.....	.....	.....	.....	.....
27	4,528	78,636	3,004	4,707	.....	866	34,377	.....	3,211	.....	75	287	2,309	308	1,149
.....	60	1,123	.....	305	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	30
$1,261	15,327	$256,454	$4,191	$22,298	$709	2,649	$93,695	$2,844	$20,185	$1,928	$1,287	$556	$11,489	$2,043	$4,117

Exports of India Rubber Manufactures from the

	Belting Value	Hose Value	Packing Value	Thread Value	Boots Pairs	Boots Value	Shoes Pairs	Shoes Value	Canvas Shoes with Rubber Soles Pairs	Canvas Shoes with Rubber Soles Value	Soles and Heels Value	Waterproofed Auto Cloth and Rubberized Fabrics Value
AFRICA												
Belgian Kongo	$1,966	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
British East Africa	31	271	.....	.....	.....	.....	.....	.....	216	155	.....	300
British West Africa	.....	$200	.....	.....	36	$108	.....	.....	.....	.....	.....	.....
British South Africa	16,819	9,421	$3,367	.....	2,139	7,142	1,050	$693	8,597	$5,644	$9,338	$1,515
Canary Islands	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Egypt	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1,019
Algeria and Tunis	1,569	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Liberia	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Morocco	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Portuguese East Africa	569	706	1,003	.....	.....	.....	24	14	314	240	.....	.....
Other Portuguese Africa	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Spanish Africa	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	275
Madagascar	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
TOTALS, AFRICA	$20,954	$10,598	$4,370	.....	2,195	$7,250	1,074	$707	9,127	$6,039	$9,338	$3,109
GRAND TOTALS	$181,090	$301,677	$91,836	$180,429	97,519	$224,650	87,968	$63,408	338,800	$249,318	$98,152	$148,477

Official India Rubber Statistics for the United States

Imports of Crude and Manufactured Rubber

	October, 1925 Pounds	October, 1925 Value	Ten Months Ended October, 1925 Pounds	Ten Months Ended October, 1925 Value
UNMANUFACTURED—*Free*				
Crude rubber	77,617,160	$50,027,338	713,570,763	$308,377,183
Balata	203,105	106,122	879,946	448,969
Jelutong or Pontianak	1,101,298	132,268	13,497,579	1,446,467
Gutta percha	509,209	80,609	2,932,070	482,655
Guayule	944,518	217,816	6,514,016	1,313,107
Rubber scrap	1,861,137	59,958	18,024,120	701,868
Totals	82,236,427	$50,624,111	755,418,494	$312,770,249
Chicle *dutiable*	1,028,060	$512,972	9,827,949	$4,893,947
MANUFACTURED—*dutiable*				
Rubber belting	53,281	$41,781	622,517	$469,916
Other rubber manufactures of substitutes for rubber	.....	138,429	.....	1,106,666
Totals	53,281	$180,210	622,517	$1,576,582

Exports of Foreign Merchandise

UNMANUFACTURED				
Crude rubber	2,636,418	$1,989,291	26,335,845	$14,323,564
Balata	36,337	22,090	491,989	316,214
Jelutong or Pontianak	.....	.....	.....	.....
Gutta percha and rubber substitutes and scraps	12,687	7,500	104,879	12,524
Totals	2,685,442	$2,018,881	26,932,713	$14,652,302

Exports of Domestic Merchandise

MANUFACTURED				
India rubber				
Reclaimed	1,167,574	$153,298	8,495,680	$822,361
Scrap and old	2,712,215	170,104	27,562,837	1,354,120
Footwear				
Boots *pairs*	97,519	224,650	745,993	1,699,030
Shoes *pairs*	87,968	63,408	936,742	844,637
Canvas shoes with rubber soles *pairs*	338,800	249,318	3,840,471	2,711,232
Rubber water bottles and fountain syringes *number*	41,498	27,976	250,505	180,140
Other druggists' rubber sundries	87,410	111,124	791,125	874,361
Bathing caps *dozen*	3,279	7,059	177,352	306,687
Hard rubber goods				
Electrical hard rubber goods	126,405	45,509	892,047	263,473
Other hard rubber goods	38,137	55,774	509,676	511,352

Tires	October, 1925 Pounds	October, 1925 Value	Ten Months Ended October, 1925 Pounds	Ten Months Ended October, 1925 Value
Pneumatic casings				
For automobiles *number*	129,368	$1,932,509	1,389,976	$17,331,608
Others *number*	5,348	29,618	46,883	185,361
Pneumatic tubes				
For automobiles *number*	129,409	311,447	1,264,015	2,389,860
Others *number*	2,451	3,512	35,736	36,299
Solid tires				
For automobiles and motor trucks *number*	11,166	348,286	93,653	2,529,168
Others *number*	267,567	75,821	1,362,638	317,304
Tire accessories	233,246	119,062	2,020,710	883,368
Belting	282,926	181,090	3,508,976	2,034,620
Hose	492,556	201,667	4,567,316	1,770,703
Packing	207,138	91,836	1,573,384	713,796
Soles and heels	310,937	98,152	2,710,286	827,879
Thread	150,224	180,429	1,198,238	1,425,655
Other rubber manufactures	358,820	173,407	4,395,445	2,054,617
Totals	.....	$4,855,056	.....	$42,127,631
Rubber toys, balls and balloons	75,674	$101,253	889,978	$1,082,265

Imports of Crude Rubber Into the United States by Customs Districts

	October, 1924 Pounds	October, 1924 Value	*October, 1925 Pounds	*October, 1925 Value
Massachusetts	2,232,757	$500,661	2,578,921	$1,491,067
New York	81,281,694	19,076,678	71,393,312	46,205,891
Philadelphia	788,721	142,367	349,549	243,090
Maryland	823,610	143,402	.....	.....
Los Angeles	1,447,392	336,232	2,827,912	1,770,862
San Francisco	645,696	143,225	178,186	131,800
Washington	.....	.....	9,280	7,547
Colorado	132,304	29,628	280,000	177,081
Totals	87,352,174	$20,372,193	77,617,160	$50,027,338

*Including Latex Dry Rubber Content.

RUBBER SOLES AND HEELS EXPORTED FROM THE UNITED STATES during the first ten months of 1925 totaled 2,710,286 pounds, value $827,879. This compares favorably with similar exports for the 1924 period of 2,098,866 pounds, value $686,037.

United States Crude and Waste Rubber Imports for 1925 (By Months)

	Plantations	Parás	Africans	Centrals	Guayule	Manicoba and Matto Grosso	Total 1925	Total 1924	Balata	Miscellaneous	Waste
January tons	28,480	989	325	54	112	....	29,960	21,611	22	1,462	206
February	21,740	1,203	120	224	163	6	23,456	31,763	48	908	241
March	31,067	1,906	287	305	346	3	33,914	17,752	25	1,022	186
April	25,403	1,167	332	78	244	7	27,231	42,436	38	987	243
May	34,187	1,834	287	203	364	14	36,889	23,914	30	816	182
June	28,522	990	225	294	299	7	30,337	18,840	33	1,160	143
July	32,147	977	335	117	321	21	33,918	18,469	46	976	371
August	29,921	598	160	456	364	85	31,584	20,076	36	641	388
September	24,777	1,486	122	500	170	16	27,071	29,000	54	506	398
October	31,450	1,647	106	1,263	414	28	34,908	37,157	153	1,081	199
November	33,066	1,629	260	690	379	26	36,050	28,660	124	633	267
Totals, 11 months, 1925 tons	320,760	14,426	2,559	4,184	3,176	213	345,318	.....	609	10,192	2,824
Totals, 11 months, 1924	272,460	11,545	3,501	883	1,283	6	.....	289,678	599	6,645	806

Compiled from statistics supplied by the Rubber Association of America, Inc.

United States by Countries During October, 1925 *(Continued)*

Waterproofed Outer Garments Value	Pneumatic Casings: Automobile Number	Pneumatic Casings: Automobile Value	Pneumatic Casings: Others Value	Pneumatic Tubes: Automobile Value	Pneumatic Tubes: Others Value	Solid Tires: Automobile and Motor Truck Number	Solid Tires: Automobile and Motor Truck Value	Solid Tires: Others Value	Tire Rubber Accessories, Repair Materials Value	Hard Rubber Goods: Electrical Supplies Value	Hard Rubber Goods: Others Value	Rubber Water Bottles and Fountain Syringes Value	Other Druggists' Rubber Sundries Value	Bathing Caps Value	Rubber Toys, Balls and Balloons Value
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	46	1,126	.....	.....	.....	.....	.....	.....	944	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	$39	.....	.....	.....	.....	.....	.....
$4,365	1,951	$22,345	$564	$3,113	.....	24	$779	.....	5,550	$26	.....	$671	$1,301	$362	$3,254
.....	73	1,299	.....	174	.....	5	294	.....	.....	.....	.....	.....	.....	.....	.....
.....	114	3,152	.....	329	.....	154	6,402	.....	.....	.....	.....	38	42	.....	617
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	73	3,643	.....	1,254	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	60	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	190	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	18	460	.....	94	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	363	4,491	.....	474	$54	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
$4,365	2,638	$36,516	$564	$5,628	$54	183	$7,475	.....	$6,593	$26	.....	$709	$1,343	$362	$3,871
$35,135	129,368	$1,932,509	$29,618	$311,447	$3,512	11,166	$348,286	$75,821	$119,062	$45,509	$55,774	$27,976	$111,124	$7,059	$101,253

United Kingdom Rubber Statistics

Imports

UNMANUFACTURED Crude rubber From—	October, 1925 Pounds	October, 1925 Value	Ten Months Ended October, 1925 Pounds	Ten Months Ended October, 1925 Value
Straits Settlements	8,845,400	£1,590,930	60,391,400	£7,836,055
Federated Malay States	3,509,000	634,999	23,460,700	3,021,399
British India	661,800	120,358	8,368,500	912,753
Ceylon and Dependencies	3,073,600	562,653	22,509,800	2,970,548
Other Dutch possessions in Indian Seas	184,900	39,457	7,200,400	841,744
Dutch East Indies (except other Dutch possessions in Indian Seas)	1,419,000	265,034	15,206,200	1,927,218
Other countries in East Indies and Pacific, not elsewhere specified	179,800	36,458	1,640,100	219,747
Brazil	625,300	64,651	6,611,700	582,920
Peru	.....	.....	15,400	1,650
South and Central America (except Brazil and Peru)	.....	.....	92,300	11,631
West Africa				
French West Africa	10,300	1,793	1,129,900	64,412
Gold Coast	20,200	3,686	231,500	27,371
Other parts of West Africa	117,000	19,196	1,002,100	106,224
East Africa, including Madagascar	101,300	18,057	652,600	81,682
Other countries	141,900	24,266	1,183,100	160,603
Totals	18,889,500	£3,381,538	149,695,700	£18,765,957
Waste and reclaimed rubber	539,200	10,835	5,906,400	78,052
Gutta percha and balata	557,300	84,695	8,540,900	1,146,107
Rubber substitutes	.....	.....	144,200	5,935
Totals	19,986,000	£3,477,068	164,287,200	£19,996,051
MANUFACTURED				
Boots and shoes....*doz. pairs*	17,448	£58,713	277,703	£693,156
Tires and tubes				
Pneumatic				
Outer covers	.....	239,969	.....	2,528,956
Inner tubes	.....	37,628	.....	371,982
Solid tires	.....	50,917	.....	326,278
Other rubber manufactures	.....	151,454	.....	1,398,312
Totals	.....	£538,681	.....	£5,318,684

Exports

UNMANUFACTURED RUBBER				
Waste and reclaimed	2,248,000	£30,009	16,782,800	£200,599
Rubber substitutes	96,600	2,361	1,076,300	24,733
Totals	2,344,600	£32,370	17,859,100	£225,332
MANUFACTURED				
Boots and shoes....*doz. pairs*	23,785	£36,735	248,187	£388,799
Tires and tubes				
Pneumatic				
Outer covers	.....	310,985	.....	2,520,636
Inner tubes	.....	68,241	.....	533,309
Solid tires	.....	42,761	.....	348,346
Other rubber manufactures	.....	282,377	.....	2,591,750
Totals	.....	£741,099	.....	£6,382,840

Exports—Colonial and Foreign

UNMANUFACTURED Crude rubber To—	October, 1925 Pounds	October, 1925 Value	Ten Months Ended October, 1925 Pounds	Ten Months Ended October, 1925 Value
Russia	47,400	£9,675	12,012,200	£1,055,466
Sweden, Norway and Denmark	202,500	35,586	1,768,700	188,205
Germany	1,403,800	232,013	18,138,600	1,865,044
Belgium	238,600	38,738	4,221,700	442,234
France	4,108,400	665,937	32,447,000	3,805,402
Spain	35,700	5,893	589,600	59,898
Italy	1,114,700	196,956	9,200,000	1,026,136
Austria	3,400	708	119,700	10,690
Hungary	2,600	461	24,300	3,448
Other European countries	52,600	10,217	1,742,200	159,192
United States	8,775,900	1,525,121	74,313,000	7,810,239
Canada	100,400	18,580	4,433,800	421,092
Other countries	110,200	18,762	905,000	99,089
Totals	16,196,200	£2,758,647	159,915,800	£16,946,135
Waste and reclaimed rubber	7,400	192	253,200	6,379
Gutta percha and balata	114,300	14,365	727,700	68,724
Rubber substitutes	34,400	1,633	90,800	4,347
Totals	16,352,300	£2,774,837	160,987,500	£17,025,585
MANUFACTURED				
Boots and shoes....*doz. pairs*	302	£977	4,347	£11,486
Tires and tubes				
Pneumatic				
Outer covers	.....	36,308	.....	379,544
Inner tubes	.....	6,691	.....	56,670
Solid tires	.....	10,624	.....	27,394
Other rubber manufactures	.....	31,133	.....	146,146
Totals	.....	£85,733	.....	£621,240

Landings, Deliveries and Stocks in London and Liverpool as Returned by the Warehouses and Wharves During the Month of October, 1925

	Landed for October	Delivered for October	Stocks, October 31 1925	Stocks, October 31 1924	Stocks, October 31 1923
LONDON:	Tons	Tons	Tons	Tons	Tons
Plantation	7,699	8,057	4,948	37,351	58,535
Other grades	13	4	33	104	74
LIVERPOOL:					
Plantation	†360	†341	†455	†3,123	†5,906
Para and Peruvian	130	133	295	140	159
Other grades	....	....	19	150	212
Total tons London and Liverpool	8,202	8,535	5,750	40,868	64,886

†Official returns from the six recognized public warehouses.

HIGHWAY EDUCATION BOARD OPENS ESSAY CONTEST

Medals and prizes are being offered to both pupils and teachers in elementary schools in a Safety Essay Contest planned as a part of the Fifth National Safety Campaign for 1925-1926. The contest is arranged under the auspices of the Highway Education Board, Willard Building, Washington, D. C.

Crude Rubber Arrivals at New York as Reported by Importers

Parás and Caucho

	Fine	Medium Cases	Coarse Cases	Caucho Cases	Cametá Cases
NOVEMBER 20. By "Aidan," Manaos.					
H. A. Astlett & Co., Inc.	525	...	214	9	...
Paul Bertuch & Co.	177	...	89	...	...
General Rubber Co.	929	70	134	30	...
L. Littlejohn & Co., Inc.	372	13	21	208	...
Meyer & Brown, Inc.	22	...	...	18	...
Poel & Kelly, Inc.	999	7	358	231	...
Ultramares Corp.	189	8	114	179	...
NOVEMBER 24. By "Thuringaria," Hamburg.					
Meyer & Brown, Inc.	...	...	41	...	...
NOVEMBER 30. By "Lanconia," Liverpool.					
Meyer & Brown, Inc.	...	...	...	30	...
DECEMBER 7. By "Samaria," Liverpool.					
Meyer & Brown, Inc.	...	...	...	52	...
DECEMBER 9. By "Pancras," Manaos.					
H. A. Astlett & Co., Inc.	638	38	227	36	...
Paul Bertuch & Co.	722	...	136	181	...
General Rubber Co.	2,110	57	333	299	175
L. Littlejohn & Co., Inc.	638	33	25	77	...
Meyer & Brown, Inc.	91	...	161	112	...
Poel & Kelly, Inc.	561	1	407	178	...
Ultramares Corp.	136	...	57	108	...

Plantations

	Cases
NOVEMBER 18. By "Laomedan," Far East.	
H. A. Astlett & Co., Inc.	835
H. A. Astlett & Co., Inc.	*298
General Rubber Co.	3,548
Haldane-Bierrie & Co., Inc.	307
L. Littlejohn & Co., Inc.	8,298
Meyer & Brown, Inc.	2,433
Meyer & Brown, Inc.	*400
Poel & Kelly, Inc.	685
Raw Products Co.	498
Chas. T. Wilson Co., Inc.	688
NOVEMBER 19. By "Marie Leonhardt," Far East.	
General Rubber Co.	144
NOVEMBER 19. By "Rhine Maru," Far East.	
H. A. Astlett & Co., Inc.	346
Baird Rubber & Trading Co., Inc.	150
General Rubber Co.	161
L. Littlejohn & Co., Inc.	112
Meyer & Brown, Inc.	39
Poel & Kelly, Inc.	277
Raw Products Co.	167
NOVEMBER 20. By "Rotterdam," Holland.	
Haldane Bierrie & Co., Inc.	141
Littlejohn & Co., Inc.	68
General Rubber Co.	1,498
Meyer & Brown, Inc.	48
H. Muehlstein Co., Inc.	43
NOVEMBER 21. By "President Polk," Far East.	
H. A. Astlett & Co., Inc.	725
Baird Rubber & Trading Co., Inc.	3,002
Baird Rubber & Trading Co., Inc.	*200
Paul Bertuch & Co.	*150
General Rubber Co.	2,860
Hood Rubber Co.	*524
L. Littlejohn & Co., Inc.	992
Meyer & Brown, Inc.	931
H. Muehlstein Co., Inc.	650
H. Muehlstein Co., Inc.	150
Poel & Kelly Inc.	448
Chas. T. Wilson Co., Inc.	1,733
NOVEMBER 23. By "Antonia," London.	
H. A. Astlett & Co., Inc.	80
General Rubber Co.	20
L. Littlejohn & Co., Inc.	100
NOVEMBER 23. By "Eastern Prince," Far East.	
H. A. Astlett & Co., Inc.	1,827
H. A. Astlett & Co., Inc.	*673
Baird Rubber & Trading Co., Inc.	946
General Rubber Co.	7,108
Hood Rubber Co.	*1,626
L. Littlejohn & Co., Inc.	5,448
Meyer & Brown, Inc.	1,664
H. Muehlstein Co., Inc.	1,560
H. Muehlstein Co., Inc.	*110
Poel & Kelly, Inc.	1,310
Raw Products Co.	155
Chas. T. Wilson Co., Inc.	672
NOVEMBER 23. By "Jufuku Maru," Hamburg.	
General Rubber Co.	56
L. Littlejohn & Co., Inc.	118
NOVEMBER 24. By "American Farmer," London.	
General Rubber Co.	120
Haldane Bierrie & Co., Inc.	50
L. Littlejohn & Co., Inc.	4,085
Poel & Kelly, Inc.	2,374
Chas. T. Wilson Co., Inc.	48
NOVEMBER 24. By "Thuringia," Hamburg.	
Baird Rubber & Trading Co., Inc.	532
General Rubber Co.	304
L. Littlejohn & Co., Inc.	2,527
NOVEMBER 25. By "Karonga," Far East.	
General Rubber Co.	140
L. Littlejohn & Co., Inc.	230
Meyer & Brown, Inc.	486
H. Muehlstein Co., Inc.	*132
H. Muehlstein Co., Inc.	160
NOVEMBER 25. By "Peleus," Far East.	
H. A. Astlett & Co., Inc.	1,067
H. A. Astlett & Co., Inc.	*164
Baird Rubber & Trading Co., Inc.	1,411
General Rubber Co.	6,113
L. Littlejohn & Co., Inc.	5,639
Meyer & Brown, Inc.	3,579
H. Muehlstein Co., Inc.	100
H. Muehlstein Co., Inc.	*200
Poel & Kelly, Inc.	1,912
Raw Products Co.	938
Chas. T. Wilson Co., Inc.	241
NOVEMBER 27. By "Arabic," Hamburg.	
Paul Bertuch & Co.	29
L. Littlejohn & Co., Inc.	1,348
NOVEMBER 27. By "De Grasse," Havre.	
Baird Rubber & Trading Co., Inc.	96
Haldane Bierrie & Co., Inc.	56
L. Littlejohn & Co., Inc.	48
NOVEMBER 27. By "Mahsud," Far East.	
Baird Rubber & Trading Co., Inc.	122
General Rubber Co.	76
L. Littlejohn & Co., Inc.	1,313
Meyer & Brown, Inc.	1,733
H. Muehlstein Co., Inc.	490
Raw Products Co.	132
Chas. T. Wilson Co., Inc.	986
NOVEMBER 27. By "Taibu Maru," Lisbon.	
H. A. Astlett & Co., Inc.	354
NOVEMBER 29. By "Vechtdyk," Rotterdam.	
General Rubber Co.	173
Haldane Bierrie & Co., Inc.	111
L. Littlejohn & Co., Inc.	578
NOVEMBER 30. By "Deutschland," Hamburg.	
General Rubber Co.	243
L. Littlejohn & Co., Inc.	1,576
Meyer & Brown, Inc.	166
H. Muehlstein Co., Inc.	180
NOVEMBER 30. By "Kendal Castle," Far East.	
H. A. Astlett & Co., Inc.	1,517
H. A. Astlett & Co., Inc.	*437
Baird Rubber & Trading Co., Inc.	516
General Rubber Co.	5,321
Hood Rubber Co.	*324
L. Littlejohn & Co., Inc.	3,480
Meyer & Brown, Inc.	3,004
H. Muehlstein Co., Inc.	468
Poel & Kelly, Inc.	1,117
Chas. T. Wilson Co., Inc.	986
NOVEMBER 30. By "Laconia," London.	
Chas. T. Wilson Co., Inc.	50
NOVEMBER 30. By "Malvernian," Far East.	
H. A. Astlett & Co., Inc.	1,569
Baird Rubber & Trading Co., Inc.	585
Baird Rubber & Trading Co., Inc.	*250
General Rubber Co.	4,226
L. Littlejohn & Co., Inc.	1,819
Meyer & Brown, Inc.	2,066
Poel & Kelly, Inc.	855
Raw Products Co.	475
Chas. T. Wilson Co., Inc.	710
NOVEMBER 30. By "Minnewaska," London.	
Baird Rubber & Trading Co., Inc.	636
General Rubber Co.	275
L. Littlejohn & Co., Inc.	3,866
Meyer & Brown, Inc.	149
H. Muehlstein Co., Inc.	27
Raw Products Co.	222
Chas. T. Wilson Co., Inc.	609
NOVEMBER 30. By "Veendyk," Far East.	
H. A. Astlett & Co., Inc.	292
H. A. Astlett & Co., Inc.	*208
Baird Rubber & Trading Co., Inc.	585
General Rubber Co.	4,788
Haldane Bierrie & Co., Inc.	51
L. Littlejohn & Co., Inc.	2,742
Manhattan Rubber Mfg. Co.	224
Meyer & Brown, Inc.	712
H. Muehlstein Co., Inc.	867
Poel & Kelly, Inc.	352
Raw Products Co.	87
DECEMBER 3. By "Barbadian," London.	
Poel & Kelly, Inc.	*211
DECEMBER 4. By "President Adams," Far East.	
H. A. Astlett & Co., Inc.	431
Baird Rubber & Trading Co., Inc.	*330
Baird Rubber & Trading Co., Inc.	1,502
Paul Bertuch & Co.	†428
General Rubber Co.	1,830
Hood Rubber Co.	*2,232
L. Littlejohn & Co., Inc.	1,101
Meyer & Brown, Inc.	980
H. Muehlstein Co., Inc.	970
Poel & Kelly, Inc.	423
Raw Products Co.	262
Chas. T. Wilson Co., Inc.	964
DECEMBER 4. By "Steelmaker," Far East.	
H. A. Astlett & Co., Inc.	250
Baird Rubber & Trading Co., Inc.	248
General Rubber Co.	4,633
L. Littlejohn & Co., Inc.	1,527
Meyer & Brown, Inc.	310
Poel & Kelly, Inc.	932
Raw Products Co.	48
Chas. T. Wilson Co., Inc.	485
DECEMBER 5. By "Carlier," Antwerp.	
Raw Products Co.	25
DECEMBER 6. By "Ascania," London.	
General Rubber Co.	811
DECEMBER 6. By "Veendam," Rotterdam.	
General Rubber Co.	361
Haldane Bierrie & Co., Inc.	145
L. Littlejohn & Co., Inc.	106
H. Muehlstein Co., Inc.	268
Raw Products Co.	31
DECEMBER 7. By "Samaria," Liverpool	
L. Littlejohn & Co., Inc.	28
DECEMBER 8. By "American Banker," London.	
General Rubber Co.	651
DECEMBER 8. By "Minnekahda," London.	
General Rubber Co.	289
L. Littlejohn & Co., Inc.	4,619
Chas. T. Wilson Co., Inc.	277
DECEMBER 9. By "Teucer," Far East.	
Baird Rubber & Trading Co., Inc.	2,124
General Rubber Co.	7,493
Hood Rubber Co.	552
L. Littlejohn & Co., Inc.	6,015
Meyer & Brown, Inc.	2,467
Meyer & Brown, Inc.	*544
H. Muehlstein Co., Inc.	1,134
H. Muehlstein Co., Inc.	*300
Poel & Kelly, Inc.	1,495
Raw Products Co.	886
Chas. T. Wilson Co., Inc.	1,677
DECEMBER 10. By "Manaar," Far East.	
Baird Rubber & Trading Co., Inc.	518
General Rubber Co.	1,295
L. Littlejohn & Co., Inc.	730
Meyer & Brown, Inc.	2,245
Meyer & Brown, Inc.	*330
Poel & Kelly, Inc.	1,012
DECEMBER 10. By "West Arrow," Antwerp.	
L. Littlejohn & Co., Inc.	96
DECEMBER 11. By "City of Norwich," Far East.	
General Rubber Co.	3,414
L. Littlejohn & Co., Inc.	322
Meyer & Brown, Inc.	280
Poel & Kelly, Inc.	123
DECEMBER 11. By "Independence Hall," Bordeaux.	
Baird Rubber & Trading Co., Inc.	262
H. Muehlstein Co., Inc.	107
DECEMBER 13. By "Montpelier," Hamburg.	
H. Muehlstein Co., Inc.	208
DECEMBER 14. By "Minnetonka," London.	
Baird Rubber & Trading Co., Inc.	100
General Rubber Co.	366
L. Littlejohn & Co., Inc.	144
DECEMBER 14. By "Suverio," Far East.	
General Rubber Co.	2,218
L. Littlejohn & Co., Inc.	741
H. Muehlstein Co., Inc.	338

*Arrived at Boston.
†Packages.
‡Bags.

	Cases
DECEMBER 15. By "Aurania," England.	
L. Littlejohn & Co., Inc.	96
DECEMBER 15. By "Silverfir," Far East.	
Baird Rubber & Trading Co., Inc.	401
General Rubber Co.	3,680
L. Littlejohn & Co., Inc.	1,481
Meyer & Brown, Inc.	964
DECEMBER 16. By "American Merchant," England.	
General Rubber Co.	170
L. Littlejohn & Co., Inc.	59
DECEMBER 16. By "Yseldijk," Holland.	
Haldane Bierrie & Co., Inc.	150
L. Littlejohn & Co., Inc.	347
DECEMBER 17. By "Gaelic Prince," Far East.	
Baird Rubber & Trading Co., Inc.	1,576
L. Littlejohn & Co., Inc.	4,191
DECEMBER 17. By "Pres. Garfield," Far East.	
Baird Rubber & Trading Co., Inc.	4,034
L. Littlejohn & Co., Inc.	3,103
DECEMBER 17. By "Walton Hall," Far East.	
Meyer & Brown, Inc.	450

Centrals

	Bales
NOVEMBER 23. By "Calamares," Limon.	
Ultramares Corp.	7
NOVEMBER 30. By "Santa Teresa," Corinto.	
Ultramares Corp.	4
DECEMBER 5. By "Venezuela," Corinto.	
Ultramares Corp.	14
DECEMBER 3. By "Sixaola" Cartagena.	
Ultramares Corp.	19
DECEMBER 6. By "Ulua," Limon.	
Ultramares Corp.	3
DECEMBER 6. By "Almagro," Guayaquil.	
Ultramares Corp.	90
DECEMBER 7. By "Jacksonville," Guayaquil.	
Ultramares Corp.	165
DECEMBER 10. By "Santa Cruz," Guayaquil.	
Ultramares Corp.	200

Gutta Siak

NOVEMBER 25. By "Peleus" Far East.	
Poel & Kelly, Inc.	12

Africans

	Cases
NOVEMBER 20. By "Rotterdam" Holland.	
L. Littlejohn & Co., Inc.	504
NOVEMBER 23. By "Eastern Prince," Far East.	
Hood Rubber Co.	*62
NOVEMBER 23. By "Jufuku Prince," Holland.	
L. Littlejohn & Co., Inc.	117
NOVEMBER 25. By "Peleus," Far East.	
Hood Rubber Co.	*104
NOVEMBER 27. By "Arabic," Germany.	
L. Littlejohn & Co., Inc.	336
NOVEMBER 27. By "De Grasse," France.	
L. Littlejohn & Co., Inc.	140
NOVEMBER 27. By "West Eldara," Belgium.	
L. Littlejohn & Co., Inc.	37
NOVEMBER 30. By "Deutschland," Hamburg.	
Meyer & Brown, Inc.	169
H. Meuhlstein Co., Inc.	‡480
DECEMBER 1. By "Veendyk," Far East.	
Hood Rubber Co.	*219
DECEMBER 4. By "La Bordaines," Bordeaux.	
L. Littlejohn & Co., Inc.	559
Meyer & Brown, Inc.	414
DECEMBER 4. By "Samland," Antwerp.	
L. Littlejohn & Co., Inc.	26
Poel & Kelly	235
DECEMBER 5. By "Carlier," Antwerp.	
L. Littlejohn & Co., Inc.	101
DECEMBER 6. By "Idaho," England.	
L. Littlejohn & Co., Inc.	139
DECEMBER 7. By "Samaria," Liverpool.	
L. Littlejohn & Co., Inc.	404
DECEMBER 11. By "Independence Hall," Bordeaux.	
Poel & Kelly, Inc.	448
DECEMBER 13. By "Montpelier," Germany.	
L. Littlejohn & Co., Inc.	103

*Bales.
†Mixed Grades.

Rubber Latex

	Gallons
NOVEMBER 30. By "Kendal Castle," Far East.	
General Rubber Co.	34,546
DECEMBER 16. By "Silverfir," Far East.	
General Rubber Co.	91,574

Guayule

	Cases
NOVEMBER 20. By "Aidan Brazil."	
General Rubber Co.	†11
NOVEMBER 30. By "Mexico," Mexico.	
Continental Rubber Co. of N. Y.	2,740
NOVEMBER 8. By "Pancras," Brazil.	
General Rubber Co.	†9
DECEMBER 7. By "Panuco," Mexico.	
Continental Rubber Co. of N. Y.	2,180
DECEMBER 14. By "Monterrey," Mexico.	
Continental Rubber Co. of N. Y.	1,620

Manicobas

	Bales
NOVEMBER 27. By "St. Patrick," Cara.	
J. H. Rossbach & Bros.	31
DECEMBER 1. By "Storm King," Brazil.	
Adolph Hirsch & Co., Inc.	135
J. H. Rossbach & Bros., Inc.	60
DECEMBER 9. By "Sardinian Prince," Brazil.	
Adolph Hirsch & Co., Inc.	82
J. H. Rossbach & Bros.	11
DECEMBER 9. By "Pancras," Para.	
J. H. Rossbach & Bros., Inc.	15

Balata

NOVEMBER 20. By "Aidan," Manaos.	
Paul Bertuch & Co.	8
General Rubber Co.	23
NOVEMBER 27. By "Arabic," Hamburg.	
Paul Bertuch & Co.	24
DECEMBER 3. By "Sixaola," Cartagena.	
Ultramares Corp.	*4
DECEMBER 8. By "Pancras," Manaos.	
Paul Bertuch & Co.	118
DECEMBER 12. By "Dominica," Cd. Bolivar.	
Ultramares Corp.	*112

Rubber Statistics for the Dominion of Canada

Imports of Crude and Manufactured Rubber

	September, 1925		Six Months Ended September, 1925	
UNMANUFACTURED	Pounds	Value	Pounds	Value
Rubber, gutta percha, etc.,				
From United Kingdom	284,935	$184,694	1,696,176	$800,768
United States	2,110,230	1,466,929	15,239,824	9,082,644
Straits Settlements	269,674	188,928	2,818,761	1,337,392
Dutch East Indies	27,818	37,126	346,443	168,776
Other countries	.....	.....	56,000	20,097
Totals	2,692,657	$1,877,677	20,177,204	$11,409,677
Rubber, recovered	698,266	$77,971	3,645,917	$395,743
Rubber, powdered and rubber or gutta percha scrap	419,411	19,419	2,508,390	132,409
Balata	101	178	1,195	1,026
Rubber substitutes	64,312	8,324	344,634	42,225
Totals	1,182,090	$105,892	6,500,136	$571,403
PARTLY MANUFACTURED				
Hard rubber sheets and rods	3,297	$2,191	128,690	$73,968
Hard rubber tubes	.....	38	.....	494
Rubber thread not covered	11,578	9,945	87,667	90,149
Totals	14,875	$12,174	216,357	$164,611
MANUFACTURED				
Belting	.....	$17,283	.....	$130,910
Hose	.....	12,633	.....	99,335
Packing	.....	2,591	.....	21,387
Boots and shoes.....*pairs*	7,248	10,920	17,995	33,728
Clothing, including waterproofed	.....	21,529	.....	101,398
Gloves	.....	1,505	.....	7,561
Hot water bottles	.....	1,923	.....	4,536
Tires, solid.....*number*	58	2,364	2,201	17,152
Tires, pneumatic.....*number*	4,503	93,639	18,545	283,257
Inner tubes.....*number*	3,354	12,308	12,222	30,643
Elastic, round or flat	.....	17,325	.....	114,488
Mats and matting	.....	2,263	.....	11,941
Cement	.....	5,920	.....	25,871
Golf balls.....*dozen*	3,475	15,331	25,267	106,094
Heels, rubber.....*pairs*	16,797	2,919	66,945	6,236
Other rubber manufactures	.....	126,035	.....	761,366
Totals	.....	346,488	.....	$1,755,903
Totals, rubber imports	.....	$2,342,231	.....	$13,901,594

Exports of Domestic and Foreign Rubber Goods

	September, 1925		Six Months Ended September, 1925	
	Produce of Canada	Re-exports of Foreign Goods	Produce of Canada	Re-exports of Foreign Goods
UNMANUFACTURED	Value	Value	Value	Value
Crude and waste rubber	$34,838	.....	$182,817	.....
Total	$34,838	.....	$182,817	.....
MANUFACTURED				
Belting	$36,523	.....	$225,900	.....
Canvas shoes with rubber soles	281,227	.....	1,254,588	.....
Boots and shoes	283,219	.....	997,445	.....
Clothing, including waterproofed	3,105	.....	22,774	.....
Hose	21,073	.....	107,091	.....
Tires, casings	990,123	.....	4,621,273	.....
Inner tubes	181,179	.....	801,527	.....
Solid	22,571	.....	105,341	.....
Other rubber manufactures	40,989	$7,190	194,702	$48,753
Totals	$1,860,009	$7,190	$8,330,641	$48,753
Totals, rubber exports	$1,894,847	$7,190	$8,513,458	$48,753

OCTOBER RUBBER GOODS EXPORTS CONTINUE HIGH

Although the value of United States exports of rubber goods during October, at $4,956,309, was slightly less than the figure for the month preceding of $5,065,262, the record was far above the average for the other earlier months of 1925. The quantity of tire exports was less than the average for this year, but each class of tires had, during October, a higher average unit value than for the month previous. New records were however made in shipments of solid tires, rubber packing, and reclaimed rubber, while exports of rubber thread, water bottles, and fountain syringes were higher than for any other month this year. The foreign demand for reclaimed rubber is steadily increasing.—*Commerce Reports.*

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TOLEDO SCALES

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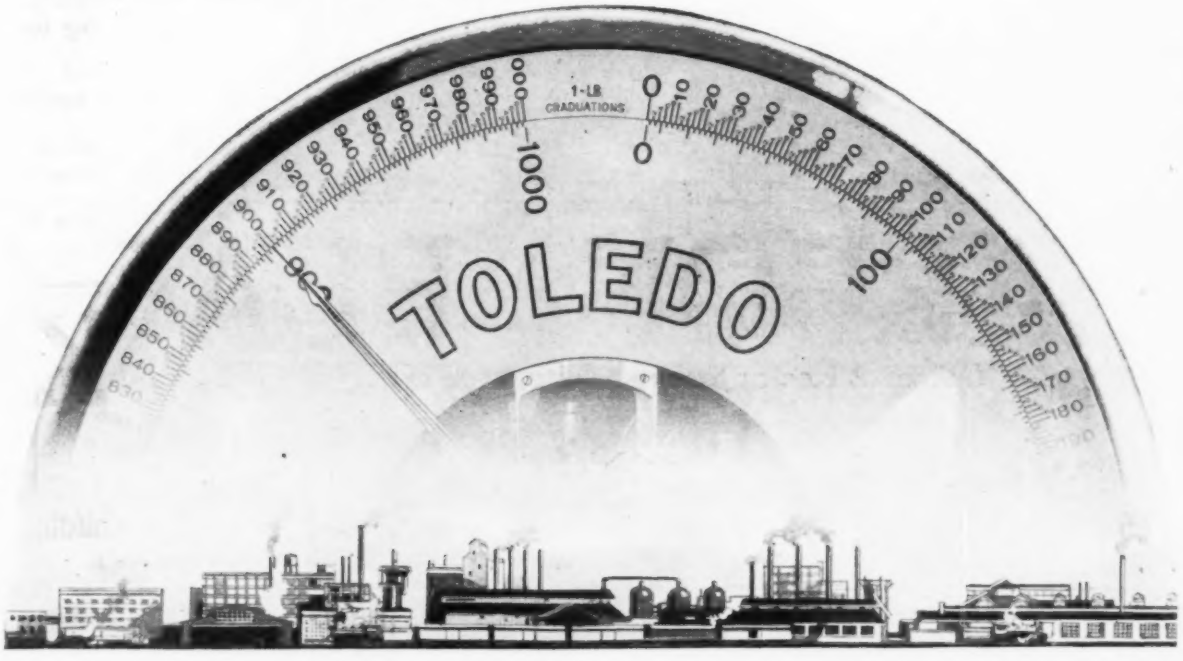

Our Publicity Page

Reaching the Men Who Control the Buying

EVERY salesman knows it is useless to try to sell goods to the office boy. The right man or men must first be reached before sales talk is of any avail. For that reason some salesmen realize that it is often equally futile to try to deal direct with the president of the company.

Who, then, is the right man?

Production Men Control the Buying

The right man is the man who initiates the installation of machinery and equipment, the buying of materials, and who specifies the type and make of the purchases. In many cases he is to be distinguished from the purchasing agent or other man who issues the formal orders.

This buying control in large, well-organized companies is often vested in the hands of two men, one of whom decides when new equipment is required, while the other decides what it shall be, the two working in more or less close collaboration. In a process industry which converts raw materials into finished products, as in the manufacture of rubber goods, superintendents or works managers are the men who principally control the buying. General managers come next, then chief engineers and engineering departments, often advised by chemical experts.

These men comprise the operating staff which is responsible not for the general administration of the business, but for its production activities, which depend upon the proper application of machinery, equipment and materials. The men who must be sold, therefore, are those in charge of production, engineering and maintenance, and must be sought by responsibilities rather than by titles.

Presidents Sometimes Production Men Also

Presidents of companies, for example, although widely considered as important buyers of industrial products, are oftener general administrative executives devoting little or no thought to the selection of equipment. Exceptions to this rule are heads of so-called "one-man" companies in which the president acts also as the production head, treasurer and purchasing agent; also a few larger organizations engaged in special production processes devised by the president and other administrative officers who are also the production men and so control the buying.

Buyers Informed Chiefly by Industrial Journals

Questionnaires and other investigations have time and again shown that the men who control industrial buying keep in touch with new developments in equipment and materials chiefly through industrial publications, by which is meant through the trade periodicals specially devoted to the particular industry involved. Visiting plants and conventions is helpful, and much valuable information is gleaned from salesmen and agents, as well as from manufacturers' literature. But as a direct channel of approach to the industrial buyer it is commonly admitted that advertising in specialized industrial journals exceeds any other in effectiveness over two to one.

The India Rubber World a Buyers' Guide

As a clearing house of research and experience, and as a leader in stimulating progress and voicing industrial policy, the worthy trade journal has become a working tool of its own particular industry, interpreting, analyzing and criticizing in the "code" of the industry it serves, and so very naturally becoming also a buying guide for equipment, materials and supplies. Among these worthy trade journals *The India Rubber World* has always been counted, and for many years it has gone regularly for careful reading to the desks of those men who control rubber mill buying, keeping them informed and helping them to select what is newest and best. It is the buyers' guide of the rubber industry.

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